DECEMBER 22, 1952

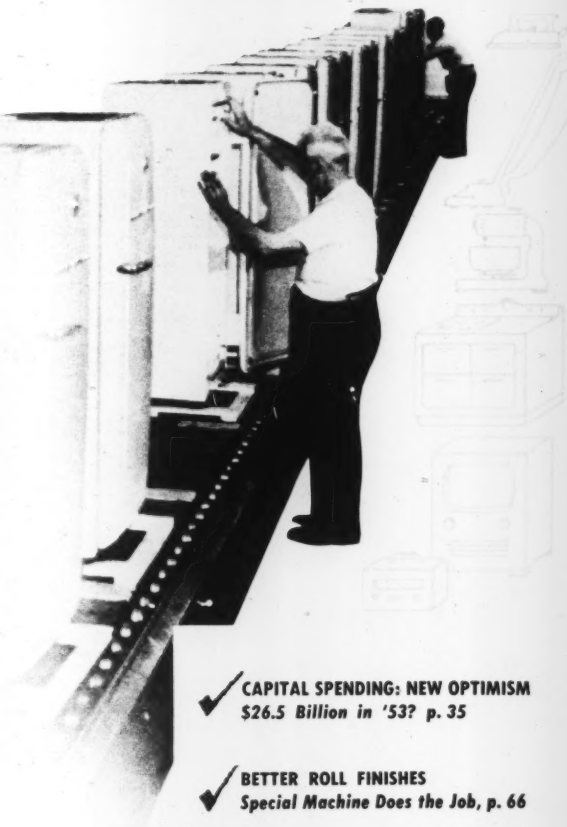
STEEL

THE WEEKLY MAGAZINE OF METALWORKING

APPLIANCES

1953 DOLLAR SALES TO SET RECORD

But unit volume will be lower than 1950 —p. 38



✓ CAPITAL SPENDING: NEW OPTIMISM
$26.5 Billion in '53? p. 35

✓ BETTER ROLL FINISHES
Special Machine Does the Job, p. 66

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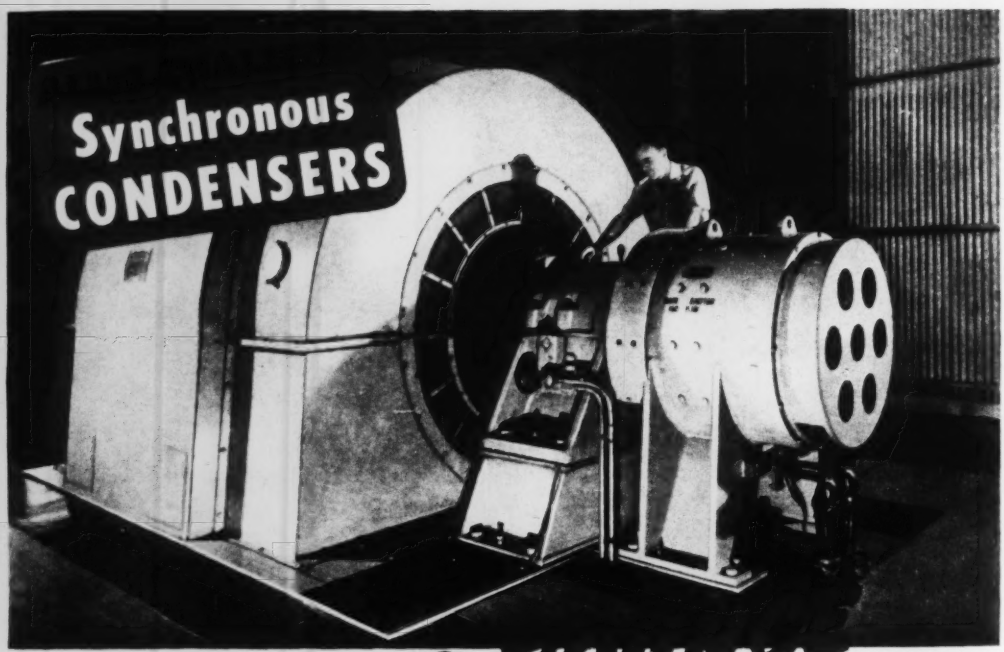


FOR LESS BOUNCE TO THE ARC

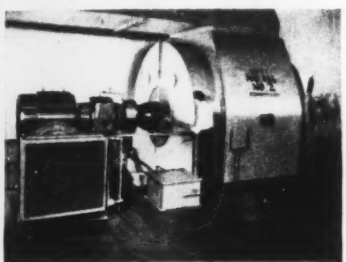
this low reactance condenser insulates power system from violent arc furnace load swings

RECENTLY INSTALLED in a southern steel plant, this 25,000-kva synchronous condenser was designed to solve a serious power supply problem. In adding a large arc furnace, the plant engineers had to keep the voltage disturbances from bouncing back into the local power system.

Short of producing their own power, they had a choice of three ways of doing this. They chose a synchronous condenser because it could do the job more economically and more reliably than a motor-generator set and could handle the violent kva fluctuations better than series capacitors.

With the condenser and furnace in parallel, a buffer reactor on the line insures adequate absorption of the arcing transients by the condenser. And pilot excitation from a *Regulex* control provides high speed response to the reactive kva swings of the furnace.

If you need a special condenser or one for power factor correction, Allis-Chalmers can supply a unit engineered to your requirements. For construction features, ratings and standards, ask your A-C representative for Bulletin 05B7285. Or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3853



One of two units installed for power factor correction in a large Ohio steel plant, this 20,000-kva synchronous condenser paid for itself within a short period of time

Regulex is an Allis-Chalmers trademark.

ALLIS-CHALMERS

This 120-barrel capacity bulk cement trailer was built of Mayari R low-alloy, high-strength steel by Clough Equipment Service, Seattle, Washington.

THEY CUT 1500 LBS DEADWEIGHT FROM THIS BULK CEMENT TRAILER

Low-alloy, high-strength steel did it. By using Mayari R the builders of this bulk cement semi-trailer were able to reduce the deadweight by 1500 lbs while adding to the overall strength.

The trailer has an all-welded tank-type hopper body, dual axles, flanged-and-dished hopper heads, air jets and vibrators. Heavy truss frames ordinarily used in trailers of this type have been eliminated. Excellent roadability and stability have been gained by lowering the center line of load.

Mayari R is well suited for vehicles like this because of its higher mechanical properties. It enables designers to use thinner, lighter sections without cutting strength or corrosion-resistance. You can use Mayari R in the as-rolled condition without heat-treatment. You can form and fabricate it by the same methods that you use for plain carbon steel, and weld it by the usual gas and electric processes.

If you are designing any kind of product where weight reduction, greater strength, or superior resistance to atmospheric corrosion are important, it will pay you to find out more about Mayari R.

Write or phone any of our sales offices for Booklet 259, giving detailed information about Mayari R.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Mayari R *makes it lighter... stronger... longer lasting*

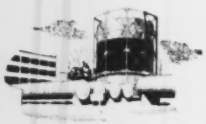
America's Largest Selling Brand of L.P.-Gas...

PHILGAS*

For Industries

Why do so many leading manufacturers rely on Philgas? Because this high-quality butane-propane fuel burns clean, there are no harmful contaminants to injure finished products. Fewer operational worries, too, with automatic Philgas systems maintaining constant temperature, atmosphere and pressure (high or low, as desired).

For Utilities



What advantages does Philgas offer utilities? Again . . . Philgas can be depended upon as a superior, reliable product . . . clean-burning and uniform in thermal values and gravity. Many progressive utilities find it profitable to augment natural or manufactured gas with Philgas. Automatic operation cuts down overhead.

*Philgas is the Phillips Petroleum Company trademark for its high quality propane-butane LP-Gas or bottled gas.

Philgas
THE ALL-PURPOSE FUEL

PHILLIPS PETROLEUM COMPANY

Sales Department · Bartlesville, Oklahoma

Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Pontiac, Mich., Indianapolis, Ind., Kansas City, Mo., Milwaukee, Wis., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tulsa, Okla., Wichita, Kans.

Only B. F. Goodrich makes the grommet belts that cut costs 20 to 50%!

Save 3 ways! Investigate today! Write or mail coupon

You save belt costs because belts last longer, save production costs because machines keep running with fewer interruptions, save maintenance costs because they need less attention.

Patented grommet belts by B. F. Goodrich represent the only basic change since invention of the V belt. Belts last 20 to 50 per cent longer, depending on service. (The more severe the service, the greater the increase over ordinary belts.) Grommet belts have more rubber; they're more flexible, give better grip, less slip.

What is a grommet?

A grommet is like a giant cable except that it's *endless*—a cord loop built up by winding heavy cord on itself. There is no overlapping cord *section* as in all ordinary belts. Most belt failures occur in these sections where cords overlap!

All cords put to work

Each of the two grommets and every part of a grommet carry their share of the load. In ordinary belts under high tension the center cords "dish" because tension is greater near the driving faces. Dished cords are doing less work, not pulling their share. Grommet belts have no center cords, there is no dishing—therefore much more strength in proportion to cord volume—and less stretch. Grommet belts stretch, on an average, only about one-third as much as ordinary belts.

Better grip, less slip

Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give ¼ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

Send for proof

Send the coupon for a set of reports telling users' experiences and showing actual installations where grommet belts outlasted all others. Some typical cases:

". . . within a few days ordinary belts had stretched . . . After six months of 24-hour-a-day service BFG grommet belts haven't stretched at all . . ."

"Ordinary belts lasted only 5 or 6 weeks . . . B. F. Goodrich grommet belts are in their sixth month of service . . ."

"Previous belts suffered from shock loads, wore out fast . . . BFG grommet belts have been in service 2 years with no shut-downs . . ."

There are hundreds of cases like these.

They cost no more

BFG grommet belts cost not one cent more than others. The savings they make for you are clear profit. They are made in C, D and E sections. They are patented by B. F. Goodrich. No other V belt is a grommet belt (U. S. Patent No. 2,233,294).

Write, send the coupon or see your B. F. Goodrich distributor. (He will show you his "X-ray" belt that shows the grommet construction clearly.)

Grommet V-Belts BY

B.F.Goodrich

FIRST IN RUBBER

The B. F. Goodrich Company
Dept. S-12
Akron, Ohio

☐ Send set of reports telling users' experiences and showing actual installations proving that B. F. Goodrich grommet belts outlast all others.

☐ Have distributor show me the "X-ray" belt that shows how B. F. Goodrich grommet belts are made.

Name_____

Firm Name_____

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Street Address_____

City_____

State_____

For better Power Steering

EATON Permanent Mold Gray Iron Castings

Send for your copy of the illustrated booklet, "A Picture Tour of the Eaton Permanent Mold Foundry."

Free machinability
Dense, non-porous structure
Uniform structure throughout the casting
Freedom from leakage under pressure
Machines to high, mirror-like finish
Properly annealed; no growth or distortion after machining

EATON MANUFACTURING COMPANY
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FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

This Week in Metalworking

STEEL

Vol. 131 No. 25 Dec. 22, 1952

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STUDY THE FACTS!

ZINC with Luster-on IS SUPERIOR TO CADMIUM for most industrial applications

Preconceived notions that cadmium plating just naturally offers better protection than zinc are contrary to the true facts. Simply because cadmium is freer again is no reason for re-converting to it. Cadmium is still and always will be far more costly than zinc. When the zinc is passivated in Luster-on conversion treatment it is far superior to cadmium for all but extremely specific applications. These are basically (1) a marine atmosphere and (2) a bearing surface.

FACT NO. 1

ZINC plus LUSTER-ON is DEFINITELY SUPERIOR TO CADMIUM IN AN INDUSTRIAL ATMOSPHERE.

FACT NO. 2

ZINC plus LUSTER-ON is DEFINITELY MORE ECONOMICAL THAN CADMIUM.

BUT IF YOU MUST USE CADMIUM to meet specifications, the new LUSTER-ON Cd, specially developed to use on Cadmium plate, will give you a BETTER, BRIGHTER CADMIUM.

Write for free data sheets on Luster-on Treatments

LEBANON CIRCLE L Castings

in Stainless and Special Alloys...

require Control in Melting

Arc or induction melting at Lebanon Steel Foundry is an exacting process, for a heat must duplicate *precisely* the material composition required. Electric melting is but one of many production procedures rigidly followed by Lebanon craftsmen that result in CIRCLE (L) castings of *controlled* high quality.

LEBANON STEEL FOUNDRY
Lebanon, Pennsylvania
"In the Lebanon Valley"

CIRCLE L LEBANON *Steel and Alloy Steel* Castings

Behind the Scenes...

Half-Century Athlete

We are delighted to have the opportunity of telling you this story about Norman A. Schuele whom some of us on STEEL have known and liked for a long time. Norm was called out to Cleveland Dec. 4 to attend Western Reserve University's annual awards banquet. Much to his surprise, he was named WRU's "Athlete of the First Half of the 20th Century." Gig, as he was known in school, won letters for football, basketball and baseball, earned a Phi Beta Kappa key and graduated Magna Cum Laude in 1916. A plaque presented by President Emeritus, W. G. Leutner describes him as "the person who best represents and typifies the qualities of man which make for greatness in athletics." He lives in New York where he heads up advertising and promotion for Revere Copper & Brass.

In the Works

We've been spending a lot of time upstairs lately catching the enthusiasm for STEEL's Yearbook issue you'll be getting in January.

Yesterday Assistant Managing Editor Vance Bell told us all about the 1953 Metalworking Facts and Figures. That's a 48-page section of charts, graphs and tables chuck full of information you'll want to use during the coming year. Incidentally we looked at proofs of the pages and there are no tables on number of cigars bought by purchasing agents since 1837; we didn't see one on total U. S. commuter mileage in 1939; and Vance says there is no tabulation of new and replacement orders for swivel chairs.

The editors have taken all of the available figures on U. S. business, cut out what is nonessential and have presented a complete but compact package of data for your actual use. The figures apply to every phase of metalworking from the raw material and basic metal industries, clean through the processing industries and out the delivery door of finished-product makers.

One figure that we noticed first was the $111 billion figure for this year's metalworking industry. That makes it Uncle Sam's biggest by far. A check of comparative data from other years will show you the growth of the industry.

Interesting note here is that the $111 billion this year is too large to fit on previous charts. The art department had to reduce the scale of the dollar-piles some to get the thing on the page in the right perspective.

The tables on world steel production were put together in STEEL's London office by Vincent Delport, our European editor. Many of the other district offices kicked in information for the section.

Sources of the information, in addition to STEEL's continuing data bureau include all of the reliable agencies which publish figures. The list covers many technical and business societies, government departments and trade associations.

This fifth annual edition of Facts and Figures took nine weeks' work, contains seven new tables (with all the others brought up to date) and will be big help to you and your business in 1953.

Our Week

We don't see why we don't have just as good a right to declare a "week" as the next guy. So in recognition of the Yearbook issue pressure, the end of golf season (we're die-hards) and the electric train we're trying to justify in our budget —this is Universal Midnight Coffee-Clutch Week.

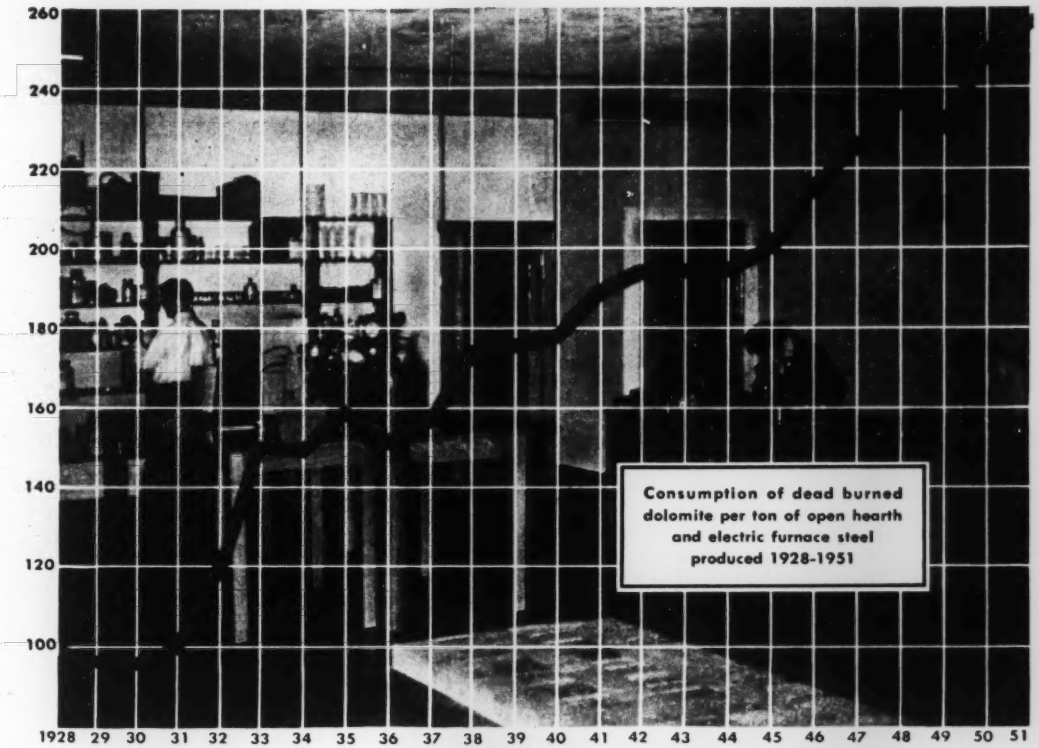
Puzzle Corner

In the puzzle of Dec. 8, Sam should land 6 miles from home. First to come to Sam's aid were M. S. Bailey, Machine Products Corp., H. L. Brittingham, Union Iron Works Co., Alfred W. Carey, National Supply Co. and L. D. Rice, Timken Roller Bearing Co.

This week we'll give you (and Sam) a breather. Every second a cubic centimeter of milk drops from a container holding one liter. In the intervals between drops a cubic centimeter of water drips into the milk. When will there be a 50-50 mixture? Assume instant dispersion. For a head start we'll remind you a liter is 1000 cc^3.

Shrdlu

(Metalworking Outlook—Page 27)



quality standards in dead burned dolomite

WHEN introduced as a substitute for Austrian magnesite during World War I, dead burned dolomite usually contained excessive and uncontrolled amounts of silica, alumina and iron oxide. It left much to be desired as a refractory. To determine standards for an ideal refractory and to correct weaknesses in this pioneer product, Basic Refractories in 1922 established a research and development program.

Investigations established the reactions that refractories undergo in contact with basic open hearth slags. These findings, supported by studies of the thermochemical reactions involved in making dead burned dolomite, made it possible to set definite standards of quality, leading to continuous product improvement.

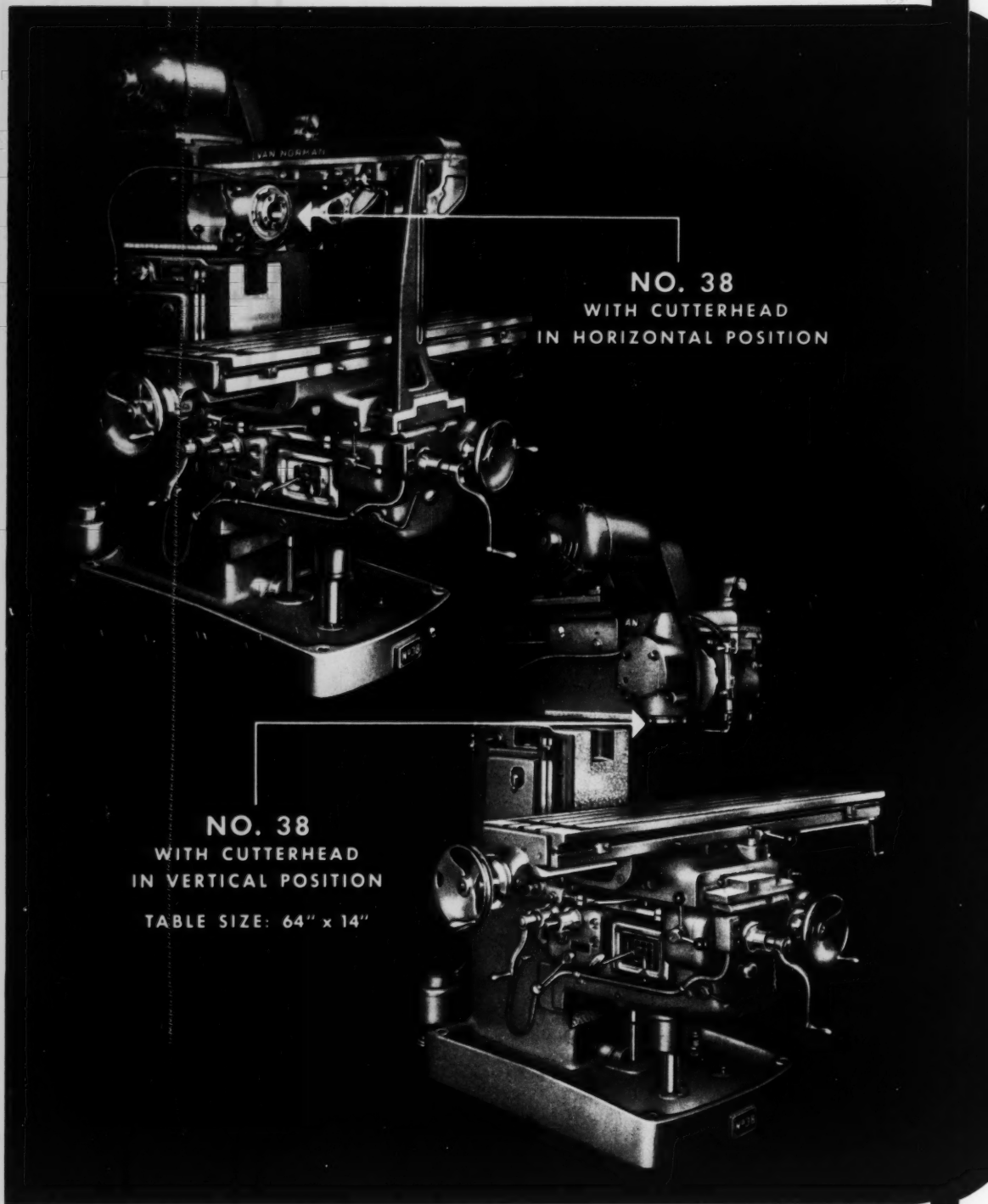
Today, the most dependable dead burned dolomites provide a maximum of the refractory oxides, crystalline lime (CaO) and periclase (MgO), with just enough calcium ferrites and silicates to provide rapid setting in the furnace hearth. The crystalline lime component performs an important function in resisting siliceous slags formed in the early stages of a heat, while the periclase component has excellent resistance to the corrosive action of the basic slag formed later.

Manufactured to standards designed to satisfy actual conditions inside the furnace, dead burned dolomite has become America's preferred maintenance refractory—dependable in performance, low in cost, and plentiful in supply. Magnefer and Syndolag, trade names synonymous with quality in dead burned dolomite, can bring these benefits to every open hearth and electric steel producer. They are available in increased tonnages due to completion of our third major plant expansion in ten years.

Basic Refractories Incorporated

845 HANNA BUILDING, CLEVELAND 15, OHIO

Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal


VAN NORMAN
NO. 38
WITH CUTTERHEAD
IN HORIZONTAL POSITION
NO. 38
WITH CUTTERHEAD
IN VERTICAL POSITION
TABLE SIZE: 64" x 14"

VAN NORMAN
Ram Type Millers Give You
MORE USEFUL WORKABILITY per Machine

The advantage of Van Norman Ram Type Millers is their versatility to meet the daily milling requirements by enabling operators to perform horizontal, angular or vertical milling, using conventional milling practice and standard arbors and cutters, all with one machine.

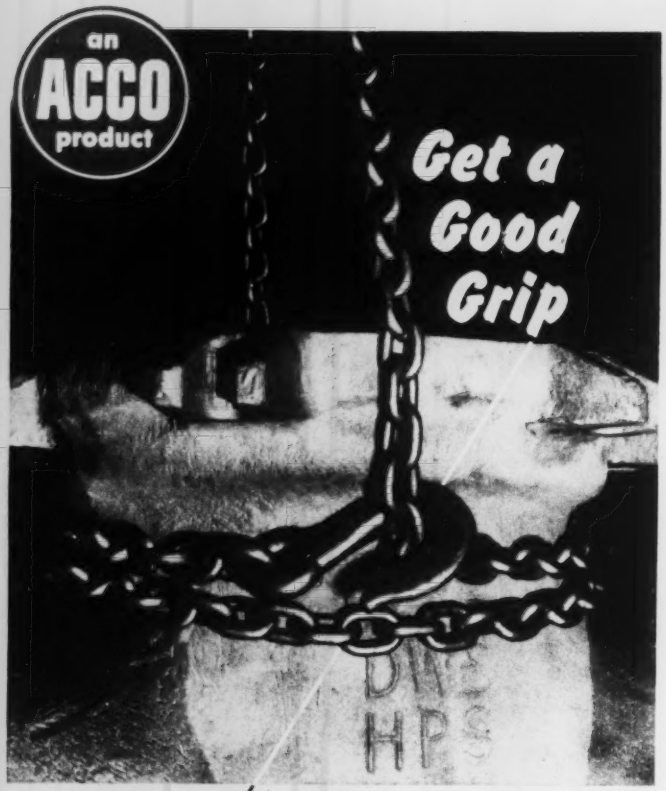
Not only does this important feature give you the workability of several single machines, but it also minimizes work set-ups . . . cuts idle machine and operator time by permitting you to meet job to job milling requirements as they occur.

In addition, the movable ram in combination with the saddle cross feed increases the work range and capacity of work that can be handled.

Because Van Norman Ram Type Millers enable you to meet all milling jobs, they keep operators and machines working. They cut costs, improve accuracy and increase production.

Write for information and catalog describing Van Norman Ram Type Millers.

VAN NORMAN COMPANY
SPRINGFIELD 7, MASSACHUSETTS



WITH AN

ACCO Registered Sling Chain

● ACCO *Registered* Sling Chains are engineered to the job. The rings, the links, the hooks—all parts are built and tested together as a complete unit.

Look at the rugged design of the unretouched hook in the photo above. See the good grip it has on the tough yet light in weight, easy-to-handle Endweldur chain. Think of the lifting safety and efficiency you would get from ACCO *Registered* Sling Chains in your own shop.

Your American Chain distributor will give you facts and specifications on ACCO *Registered* Sling Chains. Call him today or write us for **DH-314** ACCO *Registered* Sling Chain Catalog.

ACCO

TRADE MARK

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

York, Pa. Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

American Chain

LETTERS
TO THE EDITORS

Tool Steel Puzzel

We are seeking your help. We would like to know of the easiest possible method for salvaging tool steel bars, on which the trade name and other identifications are missing. Any information you can furnish will be much appreciated.

F. P. Zierden
president
Zierden Co.
Milwaukee, Wis.

● *We know of no easy way out when it comes to salvaging bars which are random. Our suggestion would be to send a sample slug of the bar to a laboratory for chemical or spectrographic analysis. Here are preventive rather than corrective suggestions: Paint the coded color which identifies the various tool steels every three feet or so along the length of the bar. Or paint the coded color the entire length of the bar with one narrow stripe. The second system has the advantage of positive identification of every inch along the length of the bar.—ED.*

Aid from Editorials

Since the termination of the Dollar Line Case I have carefully looked through the six volumes of newspaper clippings that our Public Relations Department has compiled. I am amazed at the vast amount of publicity given to this case in newspapers all over the world.

The thing that impressed and naturally pleased me the most was the hundreds of editorials that were published as the case progressed through the various courts. Among these I have read your editorials in the Sept. 24, 1951 and Apr. 14, 1952 issues of STEEL.

All editorials were called to my attention at the time they appeared. These, along with countless letters from friends and well wishers, encouraged me to continue the fight to its successful conclusion. Naturally, I would have preferred to have regained control of the Steamship Line, but insurmountable circumstances prevented me from doing so.

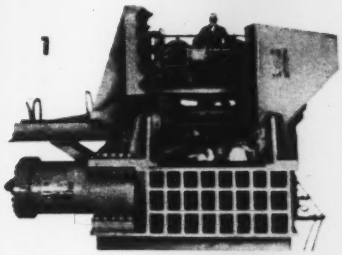
Please accept my sincere thanks for your editorials.

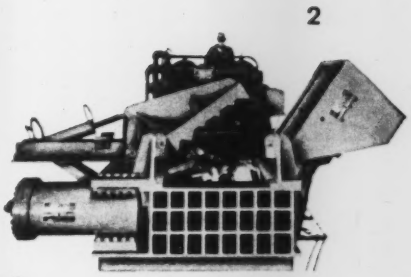
R. Stanley Dollar
Robert Dollar Co.
San Francisco

Action Is the Pay Off

May I pause to commend you sincerely for the high type of editorials that you so frequently offer—all of us, the readers of STEEL. The one in which you mention the address of Ben Morell, chairman of Jones & Laughlin

Continued on following page

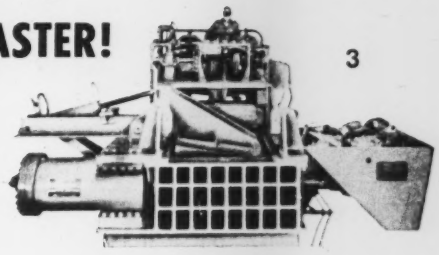




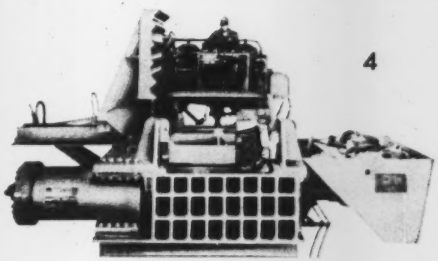
THE DEMPSTER-BALESTER

1-2-3-4 Hydraulic Operation

BALES YOUR SCRAP METAL FASTER!



The key to low cost scrap metal baling is fast, consistent baling. The big capacity *Model "600" Dempster-Balester* high speed press pictured here will bale your scrap as fast as your crane can feed it! This tremendous baling speed is due to the Dempster-Balester's 1-2-3-4 hydraulic cycle. 1—Skip Pan Loader loads charging box (see Photo 1). 2—Skip Pan returns to loading position as Auxiliary Compression Door compresses scrap with a 45-ton force. (see Photos 2 and 3). 3—Charging box door is closed and scrap is baled, then 4—finished bale, weighing between 600 and 1,000 pounds, is ejected. (see Photo 4). Without question, *Dempster-Balesters* are the fastest, most efficient presses baling scrap! For complete information clip coupon below and mail to us today. A product of Dempster Brothers, Inc.



DEMPSTER BALESTER

CHECK BELOW INFORMATION DESIRED

- ☐ Dempster-Balester Model "600". Produces 600 to 1000 lb. bales.
- ☐ Dempster-Balester Model "350" (High Speed). Produces 300 to 400 lb. bales.
- ☐ Dempster-Balester Model "275". Produces 300 to 400 lb. bales.
- ☐ Dempster-Balester Model "128" (Portable). Produces 175 lb. bales.

NAME

FIRM

ADDRESS

DEMPSTER BROTHERS, 6122 Dempster Bldg., Knoxville 17, Tennessee

OVER ONE HUNDRED YEARS OF CONTINUOUS SERVICE. ROUNDS, SQUARES, FLATS, HEXAGONS, OCTAGONS

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WHELCO M

OIL HARDENING TOOL STEEL

WL introduces *"Whelco"* – a new tool steel of M grade – a new steel of maximum toughness, hardness and strength – a steel to assure maximum results at low cost! *"Whelco"* offers great penetration of hardness, great toughness at high hardness, wide hardening range, fine grain structure, and desirable non-deforming characteristics. *"Whelco"* has good forging properties and is readily machinable in the annealed condition. All **WL** warehouses stock *"Whelco"* M tool steel in a wide variety of flats and squares. Call your nearest **WL** man for a trial order – the results will speak for themselves!

WL *steels are metallurgically constant. This guarantees uniformity of chemistry, grain size, hardenability – thus eliminating costly changes in heat treating specifications.*

Write today for your FREE COPY of the Wheelock, Lovejoy Data Book, indicating your title and company identification. It contains complete technical information on grades, applications, physical properties, tests, heat treating, etc.

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LETTERS

Concluded from preceding page

Steel Corp., "For and Not Against" (Nov. 17, p. 53), deserves special mention.

Since your Oct. 17 editorial calls us all to a high level of thinking and builds more faith in the deep desires of others, it leads me to write this letter to let you know that there are others who are acting on the principles you suggest.

J. A. McLaughry
president
Quality Tools Corp.
New Wilmington, Pa.

Supplying the News

Would you please increase our supply of the feature "As the Editor Views the News" from 27 to 35 copies.

W. E. Schneider
LaSalle Steel Co.
Chicago

• *Glad to.—ED.*

Tin Plate Talk

Various of our overseas friends have asked if we could supply them with an authoritive guide showing the types of tin plate which can be safely used for the packaging of various foodstuffs and industrial materials.

We would appreciate any information on this point which you can give us.

James B. Herzog
president
Stern, Morgenthau & Co., Inc.
New York

• *Various government regulations have stipulated the coatings of tin plate to be used for packaging various foods and industrial materials. So far as we know this is the only listing of coatings for the various food packs, and it does not necessarily follow that the suggested coatings in these regulations would be followed in normal times. We suggest you ask the National Production Authority, Washington, for detailed information on government regulations on the use of tin plate. Also, you can obtain much valuable data from producing companies, such as United States Steel Co., Republic Steel Corp., Weirton Steel Co., and Bethlehem Steel Co.—ED.*

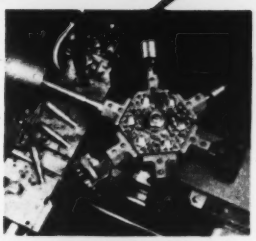
Service to the Readers

I wish to thank you for the editorial reprints from STEEL which you have very kindly supplied in answer to my requests during the past months.

The service which you provide to your readers, in this manner, is much appreciated.

W. Keith Buck
Department of Mines & Technical Surveys
Ottawa, Canada

FEED AND SPEED CHANGE—
LIGHTNING-QUICK!



Part—Clamp Post; Material—X-1315 Steel; Preselected Spindle Speeds—5; Cuts required—10; Time per piece—40 seconds; Setup Time—35 minutes.

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- Automatic electronic speed change, preselected for as many as nine stations.
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- Infinitely variable range of spindle speeds—40 to 4000 rpm.
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- Collet chuck capacity—⅜".

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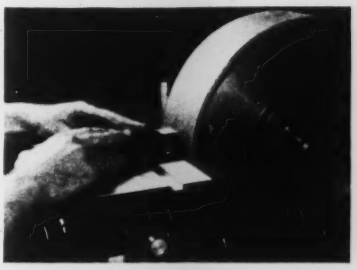

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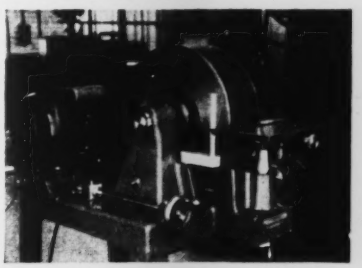

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Photo courtesy Farrington Manufacturing Company, Boston, Mass.

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Shells for many higher-quality Farrington boxes are stamped from Republic Electro Paintlok and Electro Zincbond. These zinc-coated, chemically-treated steel sheets originally were developed to *take* and *hold* paints, lacquers, and synthetic enamels. They do that job well.

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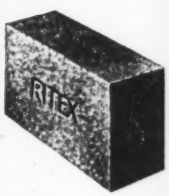
● At this time of year let us hope it will be peace. But whatever problem we must face, let's make sure American men and American industry are ready to measure up!



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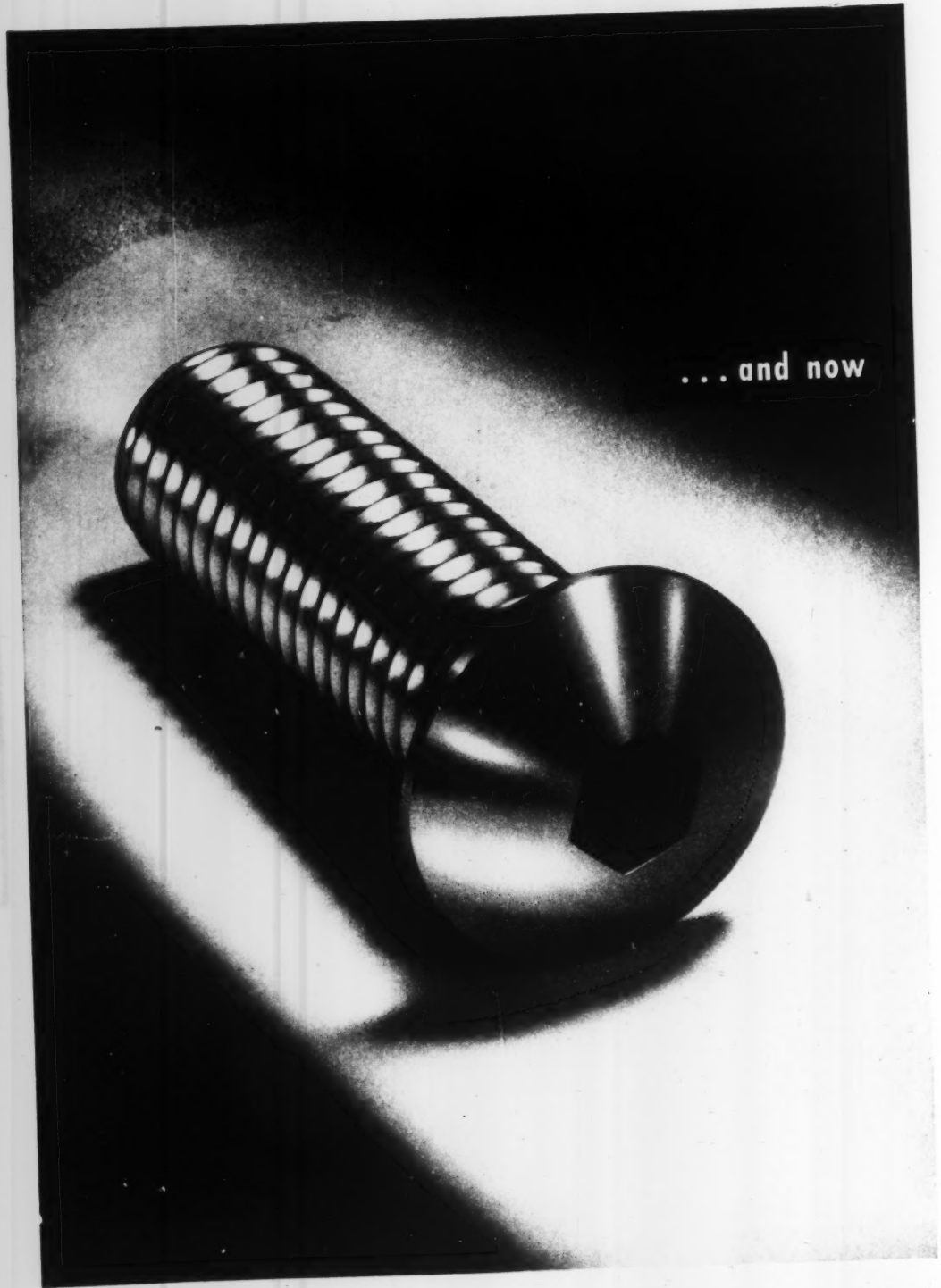
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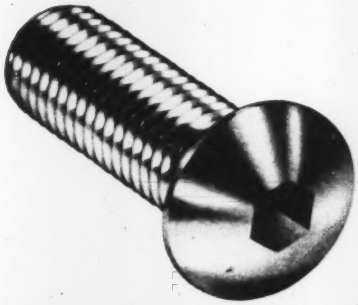

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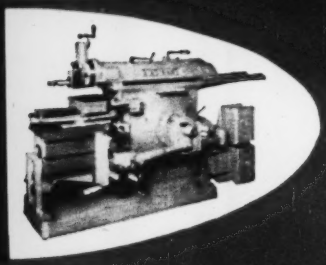

with tilting table...

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Courtesy Brockway Glass Co., Inc., Brockway, Pa.

Glass molds at the Brockway Glass Co., Inc., must be produced with very close fits on matching surfaces, and with minimum metal removal.

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The Metalworking Outlook

December 22, 1952

Decontrol: Tempered Optimism

The auto industry last week protested about second-quarter allocations but got nowhere. It's unhappy because DPA overruled NPA and put the ceiling on auto assemblies for April, May and June at 1,250,000, instead of the original 1.5 million (p. 36). The explanation for the action is probably this: The optimism about decontrol is tempering a bit. President-elect Eisenhower may step up the Korean War. DPA decided on more caution. Even so, it will authorize some 500,000 tons of additional supplemental steel allotments for the first quarter. The bulk of it will be in sheet and strip and will go for autos.

Behind the Scenes

Steel distribution is being managed increasingly by the steel companies, not the controls agencies. Three major reasons account for the setup: Steel companies know more about steel distribution than most people in Washington; controls now are pretty well established and steelmen are careful to stay well within NPA-DPA regulations; NPA-DPA personnel rosters will be cut by nearly half by Jan. 5 from peak levels (p. 41), and the agencies themselves can't handle all the work.

Action on Prices

CPR 60, the castings order, was amended Dec. 19 to permit malleable founders to raise their prices 6.2 per cent under the industry earnings standard. A similar study to determine whether earnings standard increases should be allowed on other kinds of castings has not yet been completed, but chances are good that it will be by the end of the year. OPS now has a five-man board geared to speed action on about 30 earnings standard cases still pending.

Toward Price Stability

The price level in 1953 promises to be as stable as at any time since the start of the Korean War. So, next year we may see a reversal in the trend toward ever lower household purchasing power that has been going on since 1944. National Association of Independent Business Inc. calculates that, in terms of 1950 prices and adjusting for the increasing number of households and changing tax structures, annual household purchasing power has shifted this way: 1929, $3935; 1939, $3522; 1944, $5420; 1948, $5049; 1950, $4724; 1951, $4679; 1952, $4628.

Help for Tubular Goods

Some help is coming to relieve the shortage of oil country goods which Petroleum Administration for Defense claims will be nearly 1 million tons in 1953. Republic Steel Corp. will have a seamless mill in Chicago producing shortly after the start of the year. Lone Star Steel Co. expects to have its Daingerfield, Tex., mill in operation some time in the second quarter of 1953. Colorado Fuel & Iron

Production-Engineering News—p. 63 *The Market Outlook—p. 99*

Corp. plans to have its Pueblo, Colo., facilities producing before the end of the year. All three mills will add some 233,000 tons of casing and tubing to regular production during 1953, to bring planned output of tubular goods next year to about 1,783,000 tons.

Retail Sales: Good, but . . .

Department store sales may well reach an alltime dollar high this holiday season. Yet, in the opinion of many retail executives, the performance is still a mild disappointment. Dollar volume is running about 1 per cent or so above what it was last year. Inflation in the past 12 months has been about 3.1 per cent, so the physical retail volume this year may be under the 1951 holiday season.

The Surprise Continues

The housing vacancy proportion over the country is an estimated 0.1 per cent of all available housing, compared with an average ratio of 3 to 5 per cent in the 1930s. The current rate is low compared with that before World War II, but it's now probably the highest since that war. Nevertheless, housing construction remains one of the surprises of 1952. Some 86,000 new units were started in November, to bring the 11-month total to 1,052,500.

Expensive Roads

Improvement of American highways on the federal-aid system alone will require an estimated $32 billion, American Road Builders' Association figures. The rebuilding breaks down: 148,000 miles of the primary system, $15 billion; 264,000 miles of the secondary system, $9 billion; and 10,000 miles of urban streets, $8 billion.

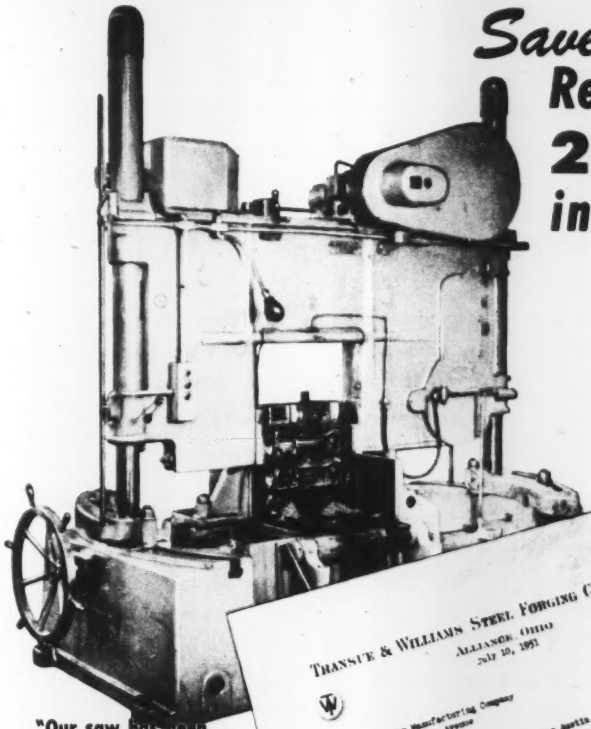
Straws in the Wind

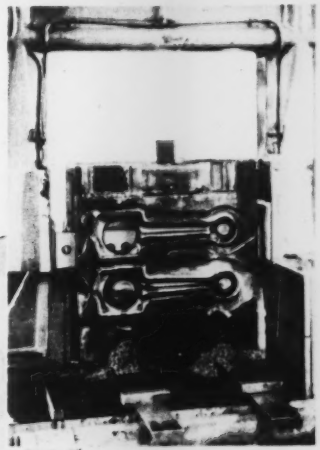
Armco Steel Corp. will spend $12 million at Ashland, Ky., to build a cold reduction mill, a continuous cold strip pickler and both light and heavy gage Zincgrip lines . . . Follansbee Steel Corp. wants a $29.5 million loan from RFC to defray part of the cost of an expansion for which a certificate of necessity was issued more than a year ago . . . M. A. Hanna Co. will spend $22 million for Oregon ferronickel production facilities . . . Soft coal producers of Illinois and Indiana will drop out of the Bituminous Coal Operators Association . . . Wage contracts of several million workers which are tied to the Labor Department's cost-of-living index will have to be renegotiated early next year because of changes in the index.

What Industry Is Doing

Capital expenditures on new plant and equipment will remain high during 1953, if outlays reach the expected $26.5 billion (p. 35) . . . Civilian manufacturers are slated to get 16.5 per cent more steel in the second quarter (p. 36) . . . Machine tool builders are worried about a possible slump now 1952 production has soared to $1.2 billion postwar record (p. 37) . . . Appliance sales may hit a $3.7 billion peak in 1953 (p. 38) . . . Basic controls programs must keep going, say new controllers: Messrs. McCoy, DiSalle and Freehill (p. 41) . . . Metal toys are crimped by materials allocations (p. 45).

Save 25% Time in Re-facing Dies... 20% Time -plus steel- in Shanking Them





Trimming the worn impression from the face of a 20" x 24" die block with a No. 24 MARVEL Universal Hydraulic Roll Stroke Hack Sawing Machine. Average Blade Cost $.0108 per square inch.

"Our saw has been in operation 2 years. Most of our sawing has been on die blocks..."

"We are removing the worn impression from the face of die blocks for resinking . . . we recently removed 2 inches from face of blocks measuring 19" x 12" . . . sawing time 296 minutes for 2 blocks . . . Set up time 31 minutes . . . grinding time 155 minutes . . . total 8 hours and 2 minutes.

"Average time for removing same amount of stock from these die blocks with planer, 10 hours and 15 minutes. Sawing saves approximately 25% of time . . .

"With regard to removing excess stock to provide shanks . . . we remove approximately 90% of metal by sawing after which block is sent to planer for finishing. Time for sawing and planing is 20% less than planing alone.

"Pieces of stock removed by sawing are useful in many ways . . . saves buying of some trimmer steel."

THANSUE & WILLIAMS STEEL FORGING CORPORATION
ALLIANCE, OHIO
July 10, 1951

Armstrong Blum Manufacturing Company
5700 W. Bloomingdale Avenue
Chicago 39, Illinois

Attention: Mr. Van Antlo, Sales Manager

Gentlemen:

We feel that you would be interested in having some of the data we have compiled on our No. 24 Marvel Metal Cutting Saw. As you know, one has been in operation approximately two years. Most of our sawing has been on die blocks furnished us either by the Segmentall Company of A. Finkl & Sons Company.

We wish to advise you that we are resawing the worn impression from the face of the blocks for resinking with the use of this saw and find that it works to a very definite advantage, depending somewhat on the amount of stock to be removed from the face of the die. On a job which we recently performed we took inches from the face of blocks measuring 19 x 12", and the time saved was 296 minutes for the face after sawing was 141 minutes, and the time required for grinding the face after sawing was 155 minutes, total 480 minutes or 8 hours and 2 minutes, over an average of eight sets of dies from these blocks with our planers, which required 10 hours and 15 minutes. Sawing saves approximately 25% of time. In addition to the saving in time, we find there is a saving in labor cost, which being paid to a planer operator, while less in the sawing operation is over and above that cost. From our experience, we find sawing only one inch to be removed from the face of the die, the saving is somewhat less, but is as near one hour per inch definitely in favor of the saw.

With regard to removing the excess stock to provide shanks on our dies, this naturally varies with the size of blocks and the depth of the shank involved. However, our experience over a year and a half period has indicated to us a saving of 90% in the amount of metal by sawing, after which the blocks are sent to the planer for finishing to the shank. We find the average over the period of time that we have found to be 20% less time that required by planing alone. Pieces of stock removed by sawing are useful in many ways and we have eliminated the necessity of buying some of our trimmer steel.

Perhaps you also would be interested in our blade life and blade cost, we have found that with an reliable blade and having it resharpened twice, we are able to cut fifty square inches. The cost of the blade being as

THANSUE & WILLIAMS STEEL FORGING CORPORATION

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Better Machines-Better Blades

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*Please do not confuse with "S H - R I P" That's our pet name for Sheet Steel cut into Strip widths, in coils or otherwise. Any Reliance "Dan" will gladly explain the difference. He'll also tell you about Reliance **Job-fitting** Service.*

If you make stampings, tubing or roll-formed shapes, then perhaps you'll say "amen" to one stamping plant operator's version of variables in the pressed metal business:

> *"Life is just one pain-in-the-neck after another, licking variables in steels, tools and dies, machines, set-ups, even lubricants."*

Dies, machines, lubricants, etc. are out of our line. But on steel, we'll do the best we know how to select and supply as uniform a product as we have. That includes thickness, temper and also finish (when a factor). It applies to Hot Rolled and Cold Rolled Sheets as well as to Cold Rolled Steel Strip.

Accuracy and uniformity in steel depend on the *Tolerance Standards* applicable to each product. For example, in Strip*, the leeway for thickness is only about half of what's allowed, say, for Sheets. In Strip, you also have a freer choice of temper (*graduated* from soft to hard). And in surface quality, it's *either* bright *or* "satin"—and consistently so.

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Good Will Toward Men

Now that we are approaching the time when a new administration will take over the reins of government, one may well wonder what if any chance there is that our new leaders will emphasize teamwork and co-operation instead of the hate and dissension that have characterized many actions of the last two Presidents.

Looking back over 20 years of new dealism and fair dealism, one is amazed at the extent to which the strategy of pitting class against class, of promoting distrust and discord and of discrediting honorable institutions has been employed for political purposes. We will never know how much the nation has lost through the dissipation of thought, time and energy in needless wrangling.

This has been true of the government's tactics even in cases where the motive was constructive. For instance, in the matter of collective bargaining the avowed objective of government was to insure industrial peace, but instead of helping both sides to find a common meeting ground that would be mutually beneficial, the government brazenly tried in every way possible to widen the breach between employees and employers.

In regard to policies pursued by the government in connection with its treatment of various economic, racial, geographical or other groups, the Washington approach never was to work for a harmonious solution. Invariably the technique was to favor one group and to harm the other, thus intensifying discord.

Fortunately there are reliable signs that the strategy of exploiting antagonisms will end on Jan. 20. The President-elect has demonstrated a rare talent for inspiring men of varied beliefs and backgrounds to work harmoniously for worthy objectives. His creed was expressed last March in an interview with editors of *U. S. News & World Report* when he said, "I believe our problem fundamentally involves human relations—the job of bringing the people together to work together. . . . I think we've got to begin to work together in America and to diminish our frictions and dissensions."

How appropriately this fits into the spirit of Christmas—"on earth peace, good will toward men!" And why isn't it good policy for every day of every year?

Merry Christmas!

E. L. Shaner

EDITOR-IN-CHIEF

STUDY NEW APPROACH: Encouraged by the prospect of a more favorable climate for business in Washington, thoughtful friends of business and industry are exploring the possibility of forming a National Business Congress. The idea (p. 42) would be to establish an organization of experienced leaders, representative of industry and investors, who would

resolve the divergent viewpoints of various business groups so as to be able to present a unified program of positive and specific recommendations to the President and to members of Congress.

A weakness of business representation in Washington today is that each group plugs for its own pet interests. These divergent recommendations tend to confuse congressmen and senators rather than to help them. Sponsors of the proposed National Business Congress believe that if it were to represent business in somewhat the same way that the House of Representatives represents the people, the results would be beneficial to everybody. This is a new approach that certainly deserves consideration.

* * *

KEPT ALIVE FOR IKE: Last week President Truman brought Michael V. DiSalle back into the government as "economic stabilizer." The advertised intent of this last-minute blood transfusion effort to keep the dying price and wage stabilization farce alive is "to maintain a strong anti-inflation program" until the new administration takes over on Jan. 20.

This means that the sham of price and wage controls will be continued right up to the time the present administration bows out. Hundreds of thousands of dollars will be wasted on rulings that either are too late to do much good or are so impractical that some innocent companies will suffer severely. There has been no sincere control of wages and the control of prices has been more obnoxious than beneficial. At long last, malleable foundries won a right (p. 27) to increase prices slightly.

* * *

OUTLOOK IS PROMISING: One of the fascinating problems of the metalworking industry is to analyze statistics of births, weddings, divorces and other family happenings and to translate these findings into realistic sales data for household appliances. The manufacturers of major appliances—the ones that cannot be moved easily by hand—expect a record-breaking volume of $3.7 billion (pp. 38, 39) in 1953.

When one delves into this interesting field, he runs smack into what is known as the saturation point. For instance, the market for refrigerators is satisfied to the extent of 87.5 per cent. However, the saturation of the market for automatic clothes dryers, which is an extremely popular item with young mothers with small children, is only 3 per cent. All of the indications of expendable income in the early future point to the likelihood that some of these low-saturation appliances will go to town in a big way.

* * *

WONDERFUL DISCOVERY: Whether or not the weight of American automobiles can be reduced appreciably depends to a considerable extent upon the materials used in body construction. According to James C. Zeder, vice president and director of engineering and research of Chrysler Corp. (p. 49), sheet aluminum in welded bodies is not being used because "we haven't licked the cost and fabrication problems." As for plastics, he says they must be molded and cured over forms. "Imagine providing Plymouth with 4000 hoods a day if each has to be cured in a form for many minutes. Compare that with stamping hoods from steel in seconds."

Motordom will adopt plastics or any other material, he says, "whenever one comes along that beats steel on price, availability of supply and production speed and competes with desirable strength qualities. If plastic or aluminum bodies were being used throughout the industry and a new material—steel—were to come along, we'd all say: 'My, what a wonderful discovery!' "

* * *

HOW WE MOVE GOODS: We applaud the Transportation Association of America for condensing into a few sentences an inventory of the nation's transportation facilities. According to its December issue of "Partners in America," we are blessed with 27,498 miles of inland waterways, 3,322,000 miles of streets and highways, 70,253 miles of airways, 5982 civil airports, 160,000 miles of pipelines and 225,915 miles of railroad rights-of-way.

Over these basic facilities are operated 2,070,428 freight cars, 42,605,000 passenger cars, 44,403 locomotives, 88,084 airplanes, 9,469,000 motor trucks, the fleets of 2700 bus companies, 8438 vessels on the Mississippi and Ohio river systems, 18,000 vessels on other inland water routes not counting the large Great Lakes fleet of bulk cargo carriers, and 9672 vessels in salt water ports. In 1952, the people spent $55 billion for transportation over these facilities, which are greater than those of all other nations of the world combined.

Tree of Freedom

Beneath its glittering tinsel, young and old find gay ribboned gifts—wrapped with the unselfish joy of giving—and tied with family love.

A star adorns its crest, symbolizing our hope for peace on earth to all men of good will.

This is the Christmas we Americans know and cherish and so it has ever been since the first Pilgrims came to this wild new country.

So may it always be—the Christmas of the faithful—and the free.

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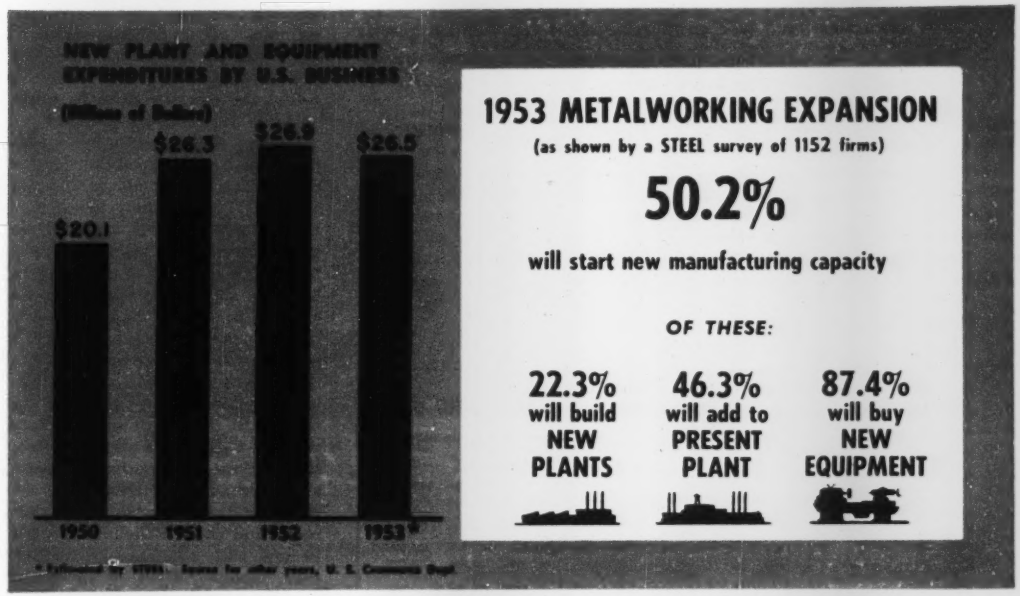


Industry's Putting its Money on Prosperity

Capital expansion will reach a record $28.7-billion seasonally adjusted annual rate in the first quarter of 1953 and it's got economists talking to themselves

INDUSTRY'S scramble for quick write-off certificates passed its peak several months ago and many observers looked for a sharp decline in this key section of the economy. When the current upturn started late in October, they figured the rise merely reflected expansion plans shelved by the steel strike.

But as expenditures now accelerate past a $28.3-billion pace, feeling is high that the push is backed by a solid wave of optimism. Few endorse the normally taciturn John Snyder's comment that the U.S. is destined to enjoy "permanent prosperity," but all admit that the nation's period of boom is showing remarkable health in its old age.

Not All Boom—The five years following the Japanese surrender have seen business spend $85 billion for new plant and equipment, and you can look for negligible diminution in capital expansion through 1953. Expenditures should reach $26.5 billion for the year as declines in such industries as steel and autos will be offset by increases in other manufacturing lines, including electrical machinery and petroleum. The commerce and labor departments predict a 4 per cent gain in construction in 1953—$33.5 billion against $32.3 billion this year—and that allows for a 28 per cent drop in industrial construction.

But equipment will be the big item in industrial expansion next year. That's because many roofs are up and awaiting equipment, and machinery costs normally run $2 or more for each $1 of building. Then, as the table above shows, 87.4 per cent of metalworking plants planning expansion in 1953 will be adding new equipment—many without any building at all.

Industry's View—The table is based on a STEEL poll of 1152 of metalworking's 60,000 firms covering expansion plans in 1953. About 50 per cent of metalworking firms plan to expand in 1953 and of these, about 2.6 per cent will expand capacity more than 50 per cent, 44.2 per cent will expand up to 10 per cent with 53.2 per cent planning 10 to 50 per cent increases.

Partially responsible for the sustained boom is the fact that about half the increases directly attributable to the defense program will be finished on Jan. 1, with the bulk coming to fruition during 1953. But Machinery & Allied Products Institute points out that internally-derived funds of corporations are rising substantially. Depreciation and amortization accruals are today 140 per cent over the 1946 level of $4.3 billion and by 1955 should be $15.0 billion per annum.

Whether the money that's available will be spent depends as much on psychology as economics. But right now confidence is high and industry's putting its money on prosperity.

More Steel for Civilians

DPA allocates 16.5 per cent more steel for civilian goods makers in the second quarter. But copper and aluminum allotments remain about the same

CIVILIAN goods manufacturers will be the principal beneficiaries of increased steel production in the three months starting next Apr. 1, according to Defense Production Administration which is handing out allotments of controlled materials for 1953's second quarter. Expect no major changes in aluminum, eventual copper improvement.

Disagreement — Passenger car makers will get enough metals to build 1,250,000 cars; the limiting factor on production is copper and aluminum. A production ceiling of 1.5 million cars was set earlier by NPA, but DPA is handing out the allotments and says it takes no responsibility for the other agency's figure.

The decision to write more tickets for steel for civilian goods manufacturers is based on a supply estimate of 21,087,250 product-tons, compared with 19,945,800 product-tons which was expected before the steel strike to be available for 1952's third quarter.

Getting Better—DPA figures indicate that requirements for lighter shapes and forms of carbon and alloy steel nearly balance supply; the trouble lies in demand for plates, structurals, rails and heavy bars. The result is the decision to hike the supplies to civilian goods makers by about 16.5 per cent.

Even with heavy shapes, there's some improvement compared to the third quarter of 1952. But mobilization planners insist supplies are still "quite tight with no immediate relief in sight." One tough problem remains, the distribution of standard railroad rail. DPA says demands of domestic and foreign railroads and other claimants can not be met with available production, even though output is estimated at 40,000 tons more than during any previous quarter under CMP. Allotments should permit building 9000 cars per month for domestic roads, about 10 per cent below the original freight car program, but a good hike over previous quarters.

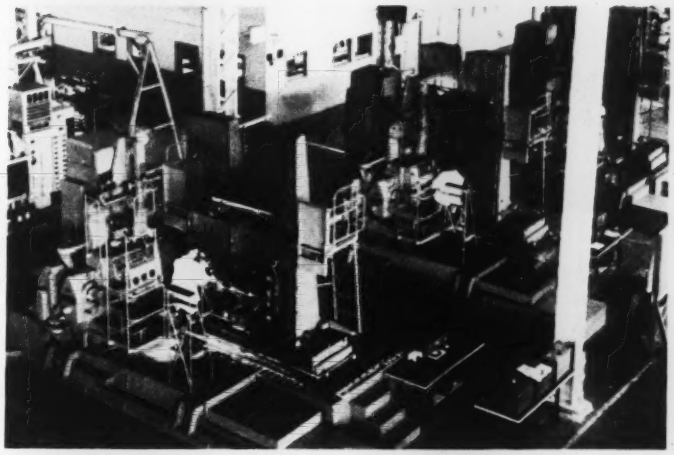
Tarnished—DPA says the stainless steel picture isn't bright because demand stands at 145 per cent of supply. The reason: Not enough nickel. The agency is programming use of aluminum based on a supply estimate of 706 million pounds. That estimate eliminates some 60 million pounds which the planners hope to put in the stockpile and about 37 million pounds of aluminum powder and foil not under controls. The second-quarter outlook for aluminum will be radically changed if the Pacific Northwest and Tennessee Valley power shortages last much longer. For the first quarter, DPA is already faced with a potential difference between supply and tickets already issued of 168 million pounds, to which a backlog of unfilled orders for about 130 million pounds must be added.

Copper is better, but clouded mainly by such indeterminate factors as the duration of price controls, set-asides for stockpiling, the level of the defense program and European demand.

Where First and Second Quarter, 1953, Allotments Will Go

	STEEL		COPPER		ALUMINUM	
	1st qtr. 1953* (tons)	2nd qtr. 1953† (tons)	1st qtr. 1953* (CCO lbs)	2nd qtr. 1953† (000 lbs)	1st qtr. 1953* (000 lbs)	2nd qtr. 1953† (000 lbs)
TOTAL ALL AMAIT'S	17,337,543	21,220,438	1,464,707	1,351,081	725,218	676,886
MRO Self Cert't Self-allot	2,117,065	3,822,898	134,271	242,002	81,877	159,218
DPA Reserves	61,481	624,131	28,180	11,285	15,230	4,995
GRAND TOTAL	19,238,047	26,167,457	1,617,158	1,604,368	872,325	841,599
SUPPLY	22,157,000	22,278,250	1,270,000	1,340,000	721,000	706,000
% OF SUPPLY	86.8	114.9	127.3	119.7	121.0	119.2
TOTAL ALL AMAIT'S	5,739,189	6,435,313	416,616	405,721	319,892	297,107
Agriculture Dept.	32,973	34,078	633	910	45	70
Army Dept.	25,313	29,056	1,296	1,512	70	70
Army Engrg. Civ.	243,851	295,526	6,266	5,990	6,153	6,590
Atomic Energy Com.	12,325	9,114	440	575	416	497
Civilian Goods	2,304,500	2,865,500	**299,580	**290,085	252,000	230,000
Civ. Sec. Power Admr.	221,484	269,935	62,032	64,980	50,000	48,500
Defense Electric Power Admr.	757	509	25	25	4	4
Defense Mobil. Fuels Admr.	60,681	60,581	1,988	1,617	350	280
Defense Solid Fuels Admr.						
Export Maint. Const.	8,640	10,030	410	310	25	30
Health, Ed. & Welfare	18,808	19,953	354	335	2	10
Interior Dept. Activ.	67,098	84,850	2,319	1,780	140	70
Int. Dept. Defense Activ.	4,450	340	28	12	10	10
Labor Dept. Activ.						
Maritime	109,181	116,780	5,874	4,400	230	195
Navy Dept.	56,574	74,140	3,768	3,245	390	276
Petrol. Reserves Activ.	18,002	23,535	3,727	4,315	98	155
Post Office Dept. Activ.	62,870	43,000	5,280	2,250	10	
Public Roads Activ.	5,808	10,003	80	114	9	10
Rec. Civ. Activ.	95,011	125,500	1,712	1,904	82	100
Int. Dept. M. & A.	614,273	946,727	12,328	11,785	8,000	8,750
Fed. Activ. Int. Dept.	1,556,894	1,909,136	8,752	7,755	1,700	1,280
Railroad Activ. Bureau	305,164	372,508	980	1,106	130	200
Veterans' Activ.	6,165	6,205	604	770	28	60
REA Activities	11,298,354	15,289,145	1,038,091	945,310	455,326	379,779
Agr. Mach. & Imp.	376,501	593,732	9,809	8,904	13,806	11,123
Agr. Tract. & Implements	100,641	135,334	15,514	14,256	11,537	10,604
Aircraft & Equipment	0	0	0	650	1,250	1,250
Building Materials	600,113	792,985	75,122	82,249	87,761	71,481
Compressors	385,630	469,525	2,995	3,066	3,175	3,175
Chemical	247	459	1,863	1,468	697	317
Construction Equip.	74,422	46,875	57,832	50,034	3,701	3,884
Construction Mach.	357,853	580,393	7,370	6,601	2,780	2,144
Electrical	631,447	761,968	57,450	49,900	83,372	72,963
Industrial & Processing	1,499,134	1,631,807	403	369	9,033	8,696
Export	24,630	‡	3,615	‡	1,975	‡
Mining	437,792	597,253	163,328	152,050	31,850	25,850
Petroleum	56,464	55,461	29,588	22,657	12,734	9,372
Plumbing & Heating	416,739	606,114	28,891	25,850	3,091	2,700
Railroad Materials	630,742	765,842	24,468	23,070	7,970	7,306
Railroad Equipment	816,218	904,318	183,287	152,462	22,600	18,278
Textile & Leather Equip.	407,214	513,167	57,119	56,969	24,090	15,405
Tractors	110,143	168,170	5,296	5,080	1,110	140
Machine & Leather Tool	7,553	3,164	1,449	1,084	1,028	706
Machine & Wood Tool	4,013	2,691	156	84	865	686
Miscellaneous	399,948	544,334	29,250	21,431	8,982	4,600
Mining, Metal	93,130	121,716	3,520	2,967	198	91
Mining, Nonmetallic & Mill	2,498	2,539	3,035	2,795	83	12
Mining, Petrol. Prod.	5,715	7,376	820	3,101	1,106	1,106
Motor Vehicle	2,421,370	3,620,260	127,446	132,843	77,535	75,425
Printing & Publishing	5,530	1,114	1,175	1,157	414	164
Prod. Power & Farming	500	‡	30	‡	57	‡
Railroad Equip.	1,103,612	1,951,961	83,450	72,822	4,735	5,858
Rubber	22,839	23,478	3,503	3,857	825	868
Shipyard & Tank Equip.	39,015	43,611	43,546	39,396	14,379	10,855
Stationary Engrg.	158,663	167,215	8,372	6,140	11,190	6,720
NPA Reserves (Gen.)	47,500	225,250	9,385	11,000	7,500	5,000
NPA Housing (Gen.)	59,951	55,050	4,519	4,000	4,000	3,000

* As of Dec. 12, 1952. † Original allotments. ‡ Included in MRO Self Certification. § Includes construction, industrial expansion and water resources. ** Includes sheet and strip weight for Copper Steel Mill.



Producing Parts for Boeing Bombers

Aircraft parts manufacture is increasingly important in the San Francisco bay area, as this view of Kaiser Mfg. Corp.'s expanding Richmond, Calif., plant demonstrates. Kaiser plans to install ten large "profile" milling machines here, adding to five already in service. They will profile mill aluminum forgings, extrusions and alloy steel forgings—parts for Boeing Airplane Co.'s B-52 bombers

High Tool Output Creates Problems

A $1.2 billion machine tool production in 1952 is gratifying, but it also brings problems: Increased need for decontrol and worries about a possible future slump

MACHINE TOOL production in 1952 will reach $1.2 billion, compared with $249 million in the pre-Korean year, 1949.

National Machine Tool Builders' Association expects tool shipments in December to hit $110 million. Two major effects that high output is having are increased pressure for decontrol and increased worries about a possible slump.

Changing Picture—On the average, rated orders are taking about 50 per cent of the machine tool output now. The machine tool order, M-41, even as modified last summer to permit more unrated orders to be accepted by builders, still restricts manufacturers in taking civilian jobs. They want M-41 liberalized still further or dropped altogether because today only about 20 of the 325 machine tool facilities in the country have such big backlogs for direct defense that they can accept no unrated orders.

Another objection to M-41 is that it's written so builders are not always appraised of often-occurring changes in manufacturing schedules of the military contractors. As a result, machine tool men frequently arrange their production and shipping schedules to meet unrealistic dates. To cure that situation, M-41 may be amended to call for a mandatory, quarterly interchange of information regarding when the equipment will be needed by the buyer and the best date the seller can promise delivery.

Another Worry — Also giving concern to manufacturers because of more production is the rapidly falling industry backlog. Contributing to the decline over the year have been military order cancellations which have totaled 33 per cent of incoming orders. The industry now has about 11 months of work ahead, compared with 18 months in January, 1952.

That's why most of them welcome the government plans to build shadow plants in several key industries, including ten or more in machine tools. Late last week, two builders slated to participate in the program were in Washington discussing plans. The shadow plants would be provided with government-owned equipment to be held in standby after completion and used in case of allout mobilization. The idea comes from the Vance committee of the Office of Defense Mobilization which is expected to issue a full report Dec. 24.

Paradox—Although the machine tool backlog is dropping, it's still unevenly distributed throughout the industry. Some companies yet have far more than a year of work. That accounts for the paradox that more capacity to produce big machine tools is scheduled to be built by Jan. 1, 1954. Enough facilities will be constructed to produce 450 large, multi-purpose precision units.

Much of that type equipment goes to the aircraft industry. Douglas Aircraft Co. Inc., for example, is just embarking on a program to spend $18 million for machine tools, many of the the large variety called "elephants."

Goal Is Set for Small Firms

Small companies are reserved $4.5 million of the $18 million expansion goal set for the "special components" industry. Only manufacturers with 300 or less employees will receive certificates of necessity for rapid amortization, says the Small Defense Plants Administration.

The "special components" goal includes facilities for production of industrial wire cloth, industrial marine supplies and wire rope, packings and gaskets, springs and bright ware goods, stampings, hand tools and parachute hardware.

Metal Firms Plan To Merge

National Lead Co., New York, continues to widen its sphere of operations in the metalworking industry. The company will merge with Doehler-Jarvis Corp., also of New York, subject to approval of stockholders.

Doehler-Jarvis is a large producer of die castings in aluminum, zinc, brass, magnesium, tin and lead alloys and an important manufacturer of ornamental and general hardware. The merger would expand National Lead's present small scale die-casting operations.

Model changes will help boost unit sales next year, but the volume will still be less than total industry capacity

APPLIANCE	UNIT SALES 1950	1952*	1953*
Ranges (Electric)	1,830,000	1,300,000	1,400,000
(Gas)	3,042,711	2,173,000	2,400,000
Refrigerators	6,200,000	3,800,000	4,000,000
TV	7,463,000	5,800,000	6,500,000+
Freezers	890,000	1,100,000	1,400,000
Washing Machines (All)	4,272,580	3,300,000	3,400,000
(Automatic)			1,750,000
Dryers	318,500	490,000	600,000
Room Air Conditioners	195,000	130,000	400,000
Dishwashers	230,000	250,000	350,000
Garbage Disposers	320,000	350,000	400,000

*Estimated by STEEL.

The Sell Comes Back In Appliance Sales

DOLLAR SALES of appliances will set a record high of $3.7 billion in 1953, maybe. That's the way appliance makers are thinking and the basis on which they're setting up production schedules.

Unit sales of major appliances will increase over 1952 sales but, with the exception of automatic, low saturation items like clothes washers and dryers, they won't get up to 1950 panic-buying highs. And that's why 1953 will also be one of the most competitive selling years since World War II.

War or No War—Of course, the whole outlook is predicated on two big conditions—that there's no hot war and no reversal of the easing in materials.

To prepare for the sales battle in 1953, inventories have been worked down to rock bottom. With low inventories, dealers will be able to offer new and improved models with the minimum of haggling on last year's items.

Consumer Analyzed—There's a good reason why appliance manufacturers are insisting that inventories of 1952 models be as nearly exhausted as possible before the introduction of 1953 models: It's the diagnosis of what was wrong with the reluctant consumer in 1952. "Dealers cut their own throats, and ours, by offering discounts and deals," sums up one manufacturer's sales manager. "Instead of selling the advantages and services of the equipment, they sold strictly on the basis of price. Psychology being about 60 per cent of this business anyway, people finally decided to wait until they saw how far down prices would go."

Prices aren't likely to go down further. Part of the record high sales dollar in 1953 will result from inflation. But, part of it will be made up of creeping price rises.

Worst Is Over—Materials shortages, number two bugaboo for appliance manufacturers this year, are now beyond their worst stage, appliance people feel. However, first quarter, 1953, allotments give little tangible evidence of any easing. Appliance makers got an average of 50 to 60 per cent of their base usage of steel during 1952 and a little less on copper and aluminum. For the first quarter, 1953, manufacturers get tickets for 33 per cent of the base period usage on steel with a hope for additional allotments which would bring the total to about 50 per cent. Copper allocations call for 50 per cent of base usage and aluminum, 55 per cent. A large conversion steel product mill reports first quarter orders fill capacity but there are only a limited number of second

quarter orders received so far.

An easing of steel supplies is looked for in the second quarter. By the beginning of third quarter, appliance makers expect to be entirely off allocating their output to distributors and that sometime in the last half of the year steel controls will be dropped or greatly modified.

Nonferrous Coming — Appliance people can also expect to share in the added aluminum production due the second half of next year and the common view is that copper will not limit output to any degree.

With the bettering supply picture, 1953 models of major appliances will take on less plastic (there's about 22 pounds of plastic on a refrigerator now) and the frantic search for substitutes will abate. The drift from steel to aluminum for trays and components and from nickel-bearing stainless to anodized aluminum for trim continues. In many cases, it's not because of availability any longer, but because aluminum is cheaper and weighs less.

Automatics Spurt—While appliance makers believe standard items, like ranges and refrigerators, will have a steady growth, they're more enthusiastic about prospects for low saturation items. Saturation is expressed in the percentage of wired homes which have a particular appliance, no matter what its age may be. Thus, saturation indicates the potential for "new" sales but leaves out the still important factor of replacement markets. Products, such as automatic washers, dryers and dishwashers, have what appliance makers call "excellent growth factors," which means the increase in saturation will be far above the normal rate.

Below is a saturation barometer like those watched by appliance manufacturers:

APPLIANCE	Per Cent of Saturation	APPLIANCE	Per Cent of Saturation
Refrigerators	87.5	Automatic Dryers	3.0
Washers (all)	75.0	Dishwashers	3.0
(automatic)	16.3	Disposers	3.0
Vacuum Cleaners	55.0	Room Air Conditioners	1.4
Ranges	24.2	Dehumidifiers	.5
Water Heaters	13.8		
Freezers	11.1		

Easier to Tool—Appliance makers can cash in on low saturation items because tooling and jig and fixture work for new models is much easier than for 1952 models. Tool and die shops are under less pressure from defense work; their backlog has been dropping slightly since March. Then, revisions in M-41 allow freer use of machine tools and special machines in production work.

Manufacturers expect to get 1953 production at a more even pace than in 1952. Output in percentages of the year's total will run about 20-30-30-20 by the quarter. No abnormally high peaks are looked for since "scare" buying will be missing and there'll be too many other claims on the consumer's dollar.

Market Uplifts—Sustaining the market will be: High employment (54.6 million nonfarm workers in October, 1952); time payments taken on after Korea will be paid up in 1952 and consumers will have an unprecedented credit reserve; population is growing and so are marriages and families; Americans seem prone to mortgage on a rising market, and prices are due to go up; Americans aren't inclined to buy on a static payroll, but coal and steel pay raises will be filtering through the economy next year; and, finally, manufacturers who were scared and miffed by drooping sales this year want aggressive merchandising.

The high-powered sales executive who can produce results is again the man of the hour. Advertising budgets are being fattened, particularly for radio and TV time. A scramble is on for strong dealerships and every effort is being made to attract them. Full-line merchandising is one way manufacturers hope to stake-out dealers for their own lines only.

Appliance makers did about $3.5 billion worth of business this year. In five years, it's expected to be a $5-billion industry and 1953 will see a step toward that goal. Barring an allout war, 1953 will see a return to healthy competition.

WHAT APPLIANCE MAKERS ARE SAYING

WILLIAM BALDERSTON, *Philco Corp.*—
"Unsatisfactory conditions, such as shortages of materials and credit retrictions which faced the industry in 1952, are at an end . . . With every prospect favorable, the appliance industry may anticipate record sales and earnings in the coming 12 months."

L. J. SORENSEN, *vice president & general manager, Deepfreeze Appliance Division, Motor Products Corp.*—
"We are set to start on Jan. 1 the most aggressive sales, advertising and merchandising campaign we have ever tackled. And we aim to keep it going full tilt through all of 1953."

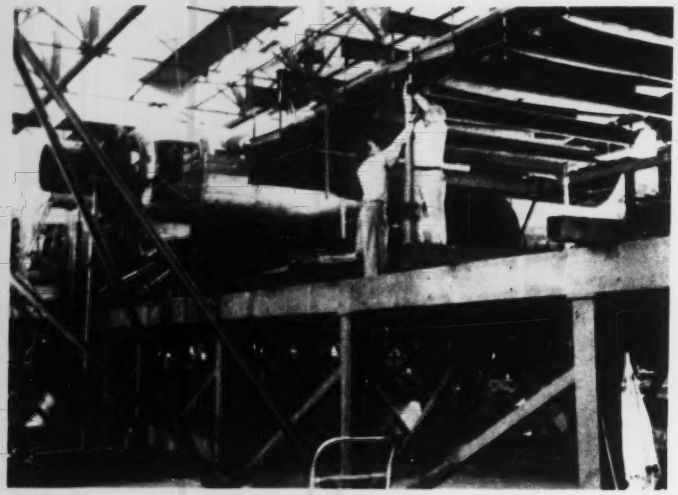
CLARENCE H. LINDER, *general manager, Major Appliance Division, General Electric Co.*—
"Our merchandising plans include five major efforts for the year: Advertising with a budget of better than $12 million; intensive retail sales training clinics to ease the transition from a seller's to a buyer's market; a permanent year-round show room at the Merchandise Mart in Chicago; a planning calendar which will keep our distributors and retailers informed of sales promotion plans; and large scale merchandising of low saturation appliances."

E. B. HUSSELMAN, *director of purchases, American Kitchens Division, AvCO Mfg. Corp.*—
"We expect our dollar volume in 1953 to be at least 25 per cent higher than in 1952. Of course, government controls, especially insofar as steel tickets are concerned, will temper this statement."

G. P. CASTNER, *general manager, Beam Mfg. Co., Division of Solar Corp.*—
"We think the continued spending for defense is going to manifest itself next year not only for the first six months but pretty well through the whole year."

JOHN C. SHARP, *president, Hotpoint Co.*—
"Business indicators show 1953 will be a good year, but the most competitive in the appliance industry since the end of World War II."

J. H. ASHBAUGH, *vice president, Appliance Division, Westinghouse Electric Corp.*—
"Naturally, aggressive advertising and merchandising programs must back any line of appliances to help tell the story of those appliances and to help create a consumer demand for them . . . Westinghouse will add two week-time television programs for 1953 as well as continue with Studio One dramatic show on Monday nights."



Hydraulic Jacks Test Steel Strength

Research engineers stretch to install hydraulic jacks under the wing of a Navy R7V-1 Super Constellation at Lockheed Aircraft Corp., Burbank, Calif. Purpose was to test durability of the air transport's steel structure under extreme pressure. During nine weeks of research, 17 tests subjected the airplane to every possible flight condition. Results of the tests gratified Lockheed's engineers

Production Problems Ground Sapphire Jet

ANOTHER CRISIS over the Sapphire jet engine (J-65) is confronting Air Force officials.

Preliminary scuffle was over which U. S. manufacturers would build the British-designed engine (STEEL, Oct. 20, p. 66). It ended with J-65 contracts going to Curtiss-Wright Corp. and Buick Motors Corp.

Latest trouble arises from differences in the methods used by U. S. and British companies to produce jet engines. The result: Sapphires made in the U. S. aren't working as they should.

Troubles—Roswell L. Gilpatric, Air Force under secretary, reports that vibrations in the U. S. engines have cracked the aluminum-alloy blades used at the first three stages of the compressor. These blades are said to have cracked during preliminary tests at Wright last fall and later at Buick, the second source of supply.

Steel blades will be substituted, but the first of these aren't expected until March. Changes will be made in the field, not in the factory. Meanwhile, pilots of the new Republic Thunderstreaks (F-84-F) are not permitted to run their Sapphire engines faster than 6000 revolutions per minute. Normal cruising speed for the plane is 8000 revolutions per minute.

Puzzler—What's puzzling the Air Force is why these blades, sturdy in British engines, should crack in U. S. models. One Pentagon official supects that British metallurgists have mastered some "trick" in the handling of the aluminum and copper alloy. Another opinion is the cracks result from machining.

Outcome of the problem is that the Air Force now hopes to have 50 engines (all with aluminum blades) by Jan. 1, instead of the nearly 100 scheduled. The Wright-built engine, after an initial failure, has passed the 150 hour model-type test. The Buick-built unit is still unapproved.

Lifting of Can Quotas Pends

Restrictions on the quantity of cans to be used to pack any product may be lifted about the first of the year. If this is done, provisions in order M-25 which sets can quota percentage restrictions for all products as classified in Schedule 1 of that order would not be renewed.

Can manufacturers recommend immediate amending of the order to permit the use of 0.25-pound tin plate wherever blackplate is specified in the order. Such a change would eliminate difficulties now experienced in the production and use of blackplate. On an annual basis, only 350 additional tons of tin would be needed for all blackplate cans excluding oil can ends. If oil can ends are included, 240 more tons would be required.

Allocations of tin mill products for can manufacturers amounted to about 813,000 tons for the fourth quarter of 1952 and will amount to slightly more than 1 million tons for the first quarter of 1953.

Small Business Awards Planned

Small Defense Plants Administration says that "Small Business Only" is being stamped on proposals for 500 purchases valued at $193 million. These 500 procurements were worked out by SDPA and the armed forces under their joint determination policy. So far, the U. S., through joint determination, has awarded small firms contracts valued at $23 million since the program's inception last June.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Shells, 105 mm	C. A. Dunham Co., Chicago
Shells, 57 mm	Harvey Machine Co., Torrance, Calif.
Boosters	Lincoln Engineering Co., St. Louis
Aircraft Engines	Bridgeport-Lycoming Div., Avco Mfg. Corp., New York
Turbo Jet Engines	Allison Div., General Motors Corp., Detroit
Engine Parts	Pratt & Whitney Aircraft Div., United Aircraft Corp., E. Hartford, Conn.
Actuators	Western Gear Works, Los Angeles
Indicators	Kollsman Instrument Div. of Square D Co., Elmhurst, N. Y.
Hydraulic Motor Assemblies	Vickers Inc., Detroit
Radar Sets	Olympic Radio & Television Inc., Long Island City, N. Y.
Light Trucks	Ford Motor Co., Dearborn, Mich.
Condensers, Steam	C. H. Wheeler Mfg. Co., Philadelphia
Boilers	Combustion Engineering-Superheater Inc., New York
Trucks	Diamond T Motor Car Co., Chicago
Patrol Boat Engines	ACF-Brill Motors Co., Philadelphia

HORACE B. McCOY
. . . acting NPA director

MICHAEL V. DiSALLE
. . . new economic stabilizer

CHECKLIST ON CONTROLS

Materials Orders

CONSTRUCTION — Amendment of Dec. 10, 1952, of NPA Order M-77 permits certain self-authorization privileges, granted to the construction industry under the Oct. 17, 1952, amendment of M-77, to become effective Jan. 1, 1953, instead of May 1, 1953, as originally intended, except for aluminum. Amendment was effective Dec. 10.

BRASS—Direction 1 to NPA Order M-82 was revoked Dec. 10, 1952. Direction 1 permitted distributors of brass mill products to acquire increased quantities of materials to strengthen their inventories in August-September, 1952.

ALUMINUM—Amendment of Dec. 16, 1952, of NPA Order M-88, effective Dec. 16, permits a mill distributor of aluminum to place with a domestic producer quarterly orders based on the higher of two figures: (1) Average quarterly receipts of aluminum from that supplier during the base period of 1950, or (2) average quarterly deliveries of domestic aluminum from that producer to fill authorized controlled materials orders during the last six months of 1952.

STAINLESS STEEL — Schedule 5 of NPA Order M-6A, issued Dec. 17, 1952, requires persons purchasing high nickel alloys to furnish an end-use certificate to their distributors. Amendment 1 of Dec. 17, 1952, of Schedule A of NPA Order M-80 requires persons ordering nickel-bearing stainlesss steel or high nickel alloys from a melter, processor or further converter to furnish the supplier with a certification of end-use. These two measures replace in part Amendment 4 of M-80 which is revoked. All actions were effective Dec. 17.

Controlled Materials Plan

CONSTRUCTION—Amendment of Dec. 10, 1952, of Direction 8 to CMP Regulation 6 changes the effective date of certain self-authorization privileges granted to the construction industry from May 1, 1953, to Jan. 1, 1953, except for aluminum. Amendment was effective Dec. 10.

NPA Regulation

BASIC RULES—Direction 5 to NPA Regulation 2 was revoked on Dec. 12, 1952. It authorized manufacturers of steel and steel products to reschedule deliveries under NPA directives affected by the work stoppage in steel industry.

Price Regulations

COAL—Amendment 3 of CPR 3, issued Dec. 11, 1952, and effective Oct. 1, 1952, permits bituminous coal operators to pass through an additional increase of approximately $0.06-0.07 above the increase authorized by Amendment 2 of CPR 3.

DEFENSE CONTRACTS—Amendment 1 of General Overriding Regulation 29, issued Dec. 11, 1952, and effective Dec. 16, limits the special adjustments under Section 3 (b) (2) of GOR 29 to commodities or services sold for the purpose of fulfilling a defense contract or subcontract. Such adjustment must be certified by the defense agency responsible for procurement of the commodity of service involved.

COPPER — Amendment 2 of CPR 68, effective Dec. 24, 1952, permits an upward adjustment of about $0.01 a pound of copper content on copper and copper-base alloy seamless tubes having an outside diameter of one inch or less and a wall thickness of 0.114 inch or less. Copper water tubes, copper oil burner tubes and brass and copper pipe and condenser tubes are excluded from this amendment.

METAL CAPS—Supplementary Regulation 128 of General Ceiling Price Regulation and Amendment 4 of General Overriding Regulation 35, both issued and effective Dec. 16, 1952, authorize ceiling price increases of 7.75 per cent for manufacturers of metal caps and metal home canning closures.

Controls Changes

They're in personnel only, claim new officials who reiterate that basic programs remain

A FLOOD of government statements reiterating that controls will be retained came following a wave of resignations and new appointments to top controls posts.

New Voices—H. B. McCoy, new acting director of NPA, succeeding R. A. McDonald, backs up Defense Mobilizer Henry H. Fowler's comment that "the size and importance of the defense mobilization program has in no sense diminished in recent weeks." Mr. McCoy is a career official in the Commerce Department who had a big hand in setting up NPA.

New Economic Stabilizer Michael DiSalle, taking over from Robert L. Putnam, says, "Inflation is still a danger."

New Price Boss Joseph H. Freehill, formerly acting administrator, reports, "I am not planning to direct the Office of Price Stabilization as though the price stabilization program has served its usefulness."

New Wage Stabilization Board Chairman Charles C. Killingsworth says, "The prevention of abnormal wage increases is the primary objective" now of the WSB.

In the Lower Echelons—Changes in personnel at controls agencies are occurring in lower and middle echelons, as well as at the top. About 2500 NPA people have been or will be let go, to bring that organization's roll from a 4000-peak to 2000 by Jan. 5. DPA will drop from a 400-peak to 175 by Jan. 5. NPA's Iron & Steel Division will slip from a 385-peak to 280 Jan. 5.

About 25 per cent of OPS employees will get their walking papers between Jan. 1 and Jan. 31, to bring the staff from the current estimated 5650 to 4125 by Jan. 31.

All the NPA, DPA and OPS staff reductions are caused by reduced budgets.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

National Business Congress? The proposal is being heard in Washington as a possible answer to labor militance and contradictory business requests to Congress

REALIZING that business is badly in need of a unified fighting front at Washington, a proposal pursued by STEEL in the capital calls for creation of a National Business Congress.

Entirely in the idea stage, it would be a body paralleling the House of Representatives to represent industry and investors rather than the public at large. It would be composed of experienced business leaders and would resolve various business viewpoints so as to come up with positive, specific recommendations to the President and to Congress.

Needed Now—Wouldn't it be a fine thing, say proponents of the idea, if such a National Business Congress were in existence now? Next year Congress will get to work on a new tax law, foreign trade policy, import tariff schedules and future economic controls.

As matters now stand, we know just about what to expect: Flour manufacturers will demand low tariff rates, approaching free trade, while the cheese manufacturers will insist on protective rates. There will be similar disagreements on tax problems, materials controls, etc., and a confused Congress will pick up the pieces and try to fit them together into something acceptable even though far short of the ideal. But the ideal solution can't be reached by Congress, as long as businessmen don't agree among themselves.

Old Problem — For years, congressmen have complained about the inability of businessmen to get together. Bob Doughton, long chairman of the tax-writing Ways & Means Committee, used to berate businessmen who appeared before his committee with conflicting recommendations. "If you gentlemen could get together, we would be in a better position to help business," he told these witnesses.

Desirous of helping business, but at a loss to know just what business wants, an up-and-coming representative-elect from Maryland, DeWitt S. Hyde, is telling his business constitutents that "it is up to the advocates of free enterprise to come forward with a program."

Highly Feasible—To organize a National Business Congress should be feasible in this country of expert organizers. If the idea were taken hold of by state chambers of commerce, state manufacturers associations and equivalent groups, it probably could be brought into actual being in a relatively short time.

Unless business and industrial leaders and investors set up as a single group prepared to shoulder responsibility in steering national policies so as to encourage economic expansion as a normal phenomenon, they are going to continue to have many causes for complaint over the way the government functions. They could well take a page out of the book of labor leaders who, following their disappointments over failure to obtain Taft-Hartley repeal and over failure to elect their candidates in 1952, are preparing to merge their unions so that in the future they can speak in the name of 16 million workers in all the key industries and thus increase their political strength.

Resourcers To Meet . . .

Look for early announcement of the program to be held in Washington March 25, 26 and 27 by Resources for the Future Inc., with headquarters at the Mayflower Hotel. This will be a big meeting fostered by the Ford Foundation, various corporations and business groups. Originally conceived for the purpose of furthering the materials program recommended in the report of the Paley Commission (STEEL of June 30, 1952, p. 46), the discussions now are to involve all resources that enter into our economic future.

According to a spokesman, the objective of the first meeting is to pave the way for a coordinated program for intelligent use of our resources, exploration and development of new resources, development of new materials, and application of proper conservation plans. To bring about such a coordinated program, three groups are to be in attendance: 1. producers, consumers, importers, dealers, etc., 2. policy-making officials of the government, and 3. private groups and associations interested in conservation and development of substitute materials.

Cost of Handling Steel Bars Cut in Half *with* BAKER TRUCK

JONES & LAUGHLIN DETROIT WAREHOUSE USES CRANE TRUCKS AND PORTABLE RACKS FOR MORE EFFICIENT HANDLING AND STORAGE

★ Specially designed portable sectional racks for storing steel bar and rod stock plus the use of a BAKER Crane Truck have cut handling costs by one-half at the Jones & Laughlin Steel Corporation's Detroit Warehouse. This stock was formerly stored by hand in upright position, requiring laborious manual handling. Even with overhead cranes, considerable hand labor was necessary. Previous to the purchase of the truck and the installation of the portable racks, Jones & Laughlin used 6, 8, or more men to pile steel and fill orders. The entire operation is now handled by three men.

With the Baker Crane Truck and sectional storage racks, costs have been halved—and the crane truck still has time to handle steel packs—a further saving not anticipated when it was purchased.

Illustration shows the BAKER Crane Truck handling steel bars stored on sectional racks set at 45° angles in 15 x 15 foot bays.

Documented Case History of Baker Truck savings for Jones and Laughlin is available. Use coupon below.

The Baker-Raulang Company
1259 West 80th Street, Cleveland 2, Ohio

Please send me case study report No. 3051 showing savings with Baker Truck at Jones & Laughlin.

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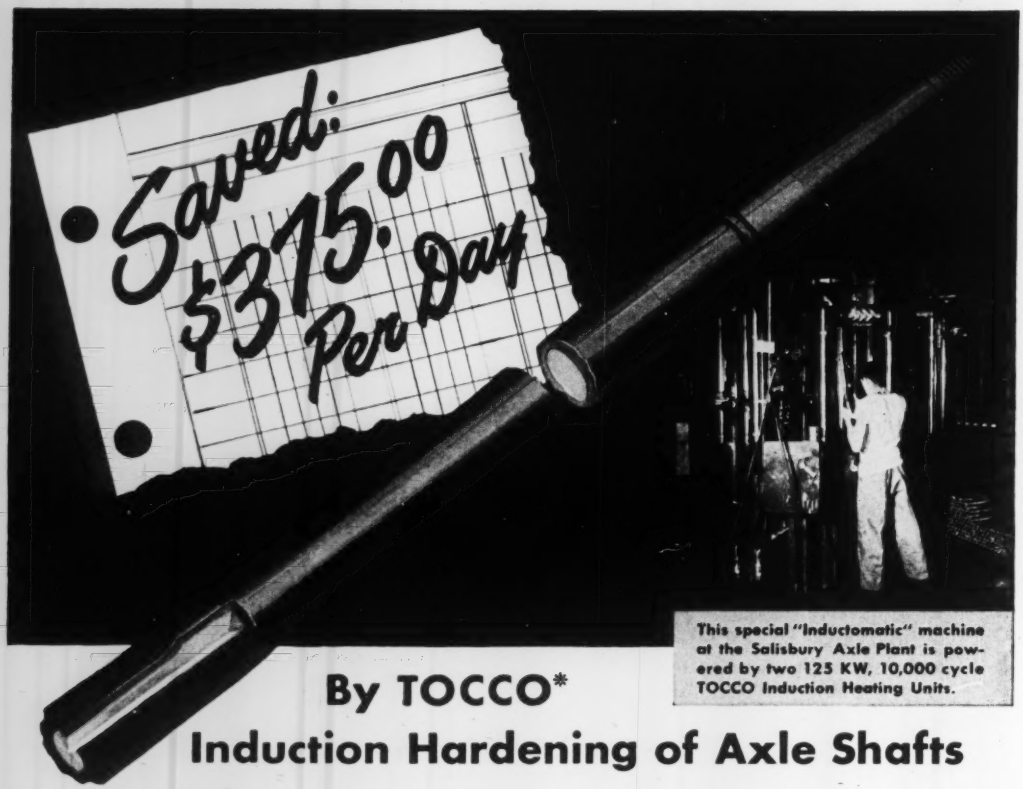
Baker INDUSTRIAL TRUCKS



This special "Inductomatic" machine at the Salisbury Axle Plant is powered by two 125 KW, 10,000 cycle TOCCO Induction Heating Units.

By TOCCO* Induction Hardening of Axle Shafts

WHAT progressive engineers at the Salisbury Axle Division of Dana Corporation have done with Induction Heating for hardening automotive axle shafts suggests comparable savings for your products. Note this report:

SAVINGS of $375.00 per day caused by increased output and switch from SAE 4140 to SAE 1033 steel made possible by induction hardening.

LESS MACHINING time because shaft of SAE 1033 steel is completely machined prior to hardening. Tool cost cut in half—turning time reduced from 2 minutes to 30 seconds.

PRODUCTION DOUBLED. Formerly 50 axle shafts per hour with conventional combustion type heating—now 120 per hour with TOCCO.

PRODUCT IMPROVED. Torsional fatigue has increased 200%. The shaft is no longer a compromise between durability and machinability. It is hardened to 55 RC and drawn back to 43-47 RC. Degree of hardness and depth is accurately controlled.

TOCCO Engineers will gladly survey *your* operations for similar cost-cutting results in hardening, heat-treating or brazing—without obligation.

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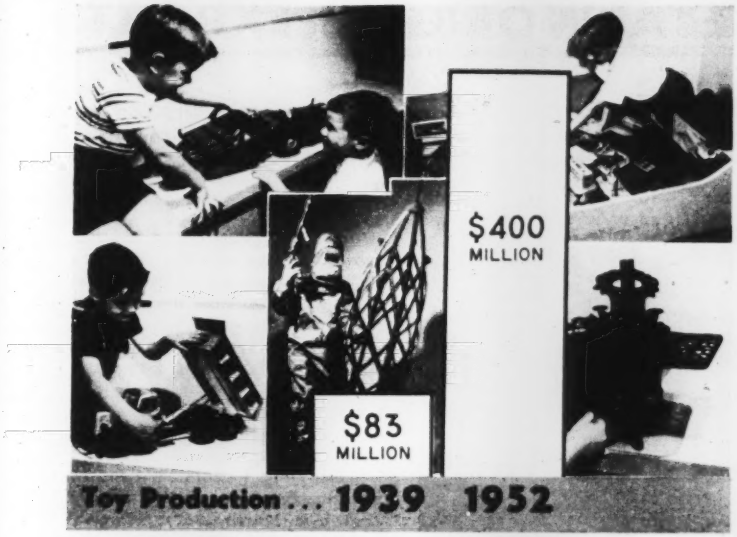


Santa Claus Is Going to Town

More kids than ever mean more toys than ever, and the nation's toymakers will post record sales this year. But metal toys were hurt by tight metals allocations

SANTA'S WORKSHOPS will pile a $280-million bundle of toys under the nation's Christmas trees this year, 70 per cent of a record $400-million output. And that's despite steel allocations of only 114,000 tons—about 50 per cent of the 226,000 tons requested.

There's no North Pole magic involved in the situation. Normally about 40 per cent of the total output is metal toys. This year the ratio is considerably tipped as plastics widen their wedge in the nursery door.

Kid Production Up—But metal toy manufacturers were more concerned about the metal shortage than the large growth in the use of plastics in toymaking. First, they regard the plastics business as creating a new field which will not encroach largely on their own; and second, the plaything-consuming child population is at a peak 45 million with 62 per cent more youngsters under five today than in 1940. That means plenty of demand for all for some time to come and toymakers are on two and three shifts trying to fill last minute orders.

Normally the fourth quarter is quiet for Santa's helpers. New lines are designed during the preceding year and production begins during January and February for the annual Toy Fair held in March, says the Toy Manufacturers Association. There buyers look over the new offerings and place orders for Christmas by midsummer.

Plaything Pessimism—This year buyers were cautious. Santa left them stuck two years in a row with heavy inventories instead of empty shelves on Christmas morning. Now parents are going all-out for the small fry and the nation's 1200 major toymakers wish they had some elves to help them meet the orders they won't be able to fill.

And what do kids want? Cowboy equipment is the top item for the boys and walking dolls head the list for the girls. Futuristic space toys are not selling as well as expected. A pirate pistol replica is outselling an atomic toy gun over 50 per cent. The steam locomotive may be on its way out on the railroads, but in the playroom junior still has a hearty preference for the action of drivers contrasted with the relative docility of diesel models. Another hot item is a scale-model Cadillac convertible with a set of tools and spare parts to take it apart and put it together again, while war items are selling but aren't particularly popular. Several of the most popular war toys are imported from Germany and Japan.

Backward Generation?—Clinching the "good old days" trend in kiddie toyism is game demand. "Monopoly" is the top seller after a generation while the even older "Parcheesie" is running a close second, and the toymakers look to their old formulas in creating the new items for 1953—realism and action in down to earth forms.

With heavier child population, an average of 60,000 birthdays every day in the year is helping to round out the formerly extremely cyclical toy production pattern and toymakers see the time when the bumps will be eliminated. But in the meantime, with easing metal supplies in store for 1953 and the lusty wail from the nursery, Santa Claus is goin' to town.

Truck-Trailer Outlook Bright

Manufacturers of truck-trailers report their 1952 production and sales as excellent and the outlook for business in the first six months of 1953 as optimistic. Production in 1952 should equal 1951's output.

Truck-trailer production in 1952's first quarter was 14,785 units; second quarter, 14,355 units; third quarter, 12,741 units; and the month of October, 5118. NPA officials said that November and December output should be good, indicating that the fourth quarter should be the best three-month period of the year.

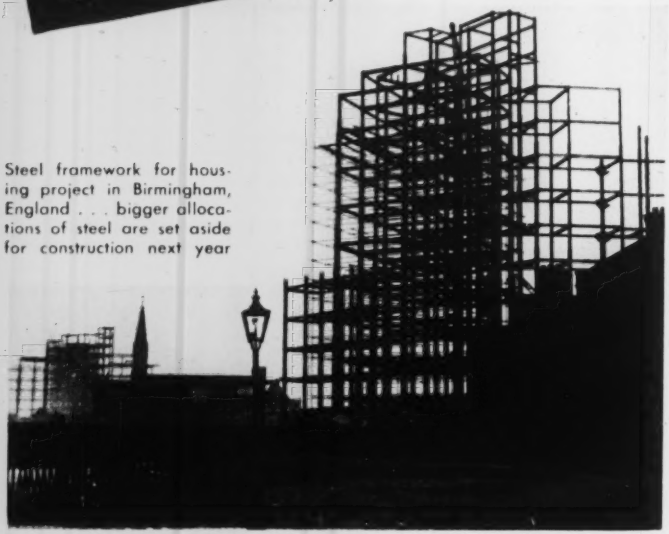
Members of the Truck-Trailer Industry Advisory Committee said trailer demand is showing a trend toward aluminum-built and refrigerated type units. NPA reported that while aluminum supplies are short, allocations should be greater starting with 1953's second quarter.

Industry members said their only steel procurement problem was in obtaining bars, plates, tubing and zinc-coated sheets.

EUROPE'S METALWORKING EXPORTS

GREAT BRITAIN

Late in 1952 the British began to see the end of desperate raw materials shortages. Now it's a question of supporting the defense program while giving metalworking industries enough steel to maintain export markets



Steel framework for housing project in Birmingham, England . . . bigger allocations of steel are set aside for construction next year

GREAT BRITAIN faces another critical decision in 1953: Where to strike the balance of steel allocations between defense work and export industries.

Britain must export to live. The decline in metalworking output and a worsening export position may force the British government to carry out some pruning of their defense program.

Controlling Factors — Reasons for the slippage in British export trade since March, 1952, are varied. Growing competition, particularly in hard goods like automobiles from Germany and other European countries, has provided a serious challenge. Currency restrictions have closed some markets completely while high prices have put

WEST GERMANY

An easing world market did not slow down the German steel expansion. Price competition next year may force more attention toward cost-cutting, less to expansion

THE WEST GERMAN steel industry continued to expand at top speed in 1952. Price controls on iron and steel were ended, monopolistic steel organizations were broken into smaller, independent companies and restraints were taken off expansion programs.

Pig iron production reached an annual rate of 14.5 million tons in 1952 against an annual output of 11.8 million tons in 1952. Steel production of West Germany will amount to about 17.3 million tons in 1953 and is expected to rise to 19.8 million tons next year. It's estimated that the steel industry invested about 1 billion marks ($238 million) this year in expansion programs from depreciation and retained profits alone.

A New Note—There was one discordant note, however. For the first time in many years, German steelworks faced problems of high production costs and increasing foreign competition. An easing in demand for steel in the world markets left German steel prices higher than those of France and Belgium. When German iron and steel prices were freed in August, 1952, they rose about 10 to 20 per cent, which aggravated the deteriorating German position (see the accompanying table).

THESE are two more articles in a series on the economic past, present and future of the major European countries. On Dec. 8 we wrote about Italy and Sweden, on Dec. 15 about France and Belgium. Next week we conclude the series with a summary of the situation in Western Europe. Complete iron and steel statistics for all industrial nations of the world will be carried in the 1952 Metalworking Yearbook issue Jan. 5

Growing Chorus — Complaints of high prices on steel from domestic mills are increasing. German steel consuming industries, particularly machine builders, stress their loss of competitive prices on world markets. Value of machinery exports will total about 2.2 billion marks ($524,000,000) in 1952 compared to 2.5 billion marks ($595,230,000) in 1951 and 1.3 billion marks ($309,500,000) in 1950. Fourth quarter, 1952, saw a tap-

FACE COST TEST IN 1953

others out of reach. Nearly all overseas markets are more difficult to sell now than they were immediately after World War II.

British car exports fell 6.6 per cent in the first eight months of 1952. Only by exporting 80 per cent of the total production were losses held to that figure. Total car production dropped 9.6 per cent in the same period.

Sales Sallies—Car makers insist that 1953 will be a decisive period for their industry. More steel must be made available for export production. Intensive selling campaigns are planned in markets hitherto untapped and greater sales will be sought in countries which have already bought thousands of British cars; the U. S. for one.

In shipbuilding yards there has been no shortage of orders thus far; only steel supplies limited production. Launchings from the Scottish shipyards in the first ten months of 1952 totaled 83 ships with an aggregate tonnage of over 400,000 tons — an improvement over 1951. Here again, however, a note of warning is sounded by the British shipbuilders. They're finding it difficult to hold their own against rising competition from Japan and other European shipbuilders. They say, too, they'll have to get more steel to be able to hold their position in world trade.

Decontrol Talk—All this comes at a time when Britain was beginning to see the end of desperate raw materials shortages. Steel production had improved and, for a short time, there were even rumors of decontrol.

Steel ingot output in 1952 will come within a shade of 1950's record 16.3 million tons. And it's estimated about 1 million more tons of foreign steel were purchased by British users during 1952. Pig iron output is running at a rate of nearly 11 million tons annually, a million tons more than in 1951. Foreign imports of iron ore were stepped up 2 million tons over 1951. Steel scrap drives, begun in 1951 by the British Iron & Steel Federation, were intensified in 1952; in the first ten months of the year scrap deliveries from home sources exceeded the 1951 shipments by more than 300,000 tons. In the third quarter, 117,000 tons of scrap were added to the nation's stocks. Coal stocks are better than at any time since World War II, at 19 million tons.

Some Improvements—In a tempering move, the British government has increased steel allocations for defense work, exports, factory building, shipbuilding, engineering and the automotive industry in the first quarter, 1953. Factory building gets between 15 and 16 per cent more steel; shipbuilding about 9 per cent more, making the allotment about 260,000 tons for the quarter and export industries can negotiate for more steel as needed.

Meanwhile, the whole British defense effort is being reviewed to ensure that defense work will not require a contantly expanding expenditure of money and material over an indefinite period.

ering off in machinery exports, and all capital goods exports for that matter.

Despite 1951's good showing, Germany's share in world machinery exports was only 13.4 per cent against 29.6 per cent prior to World War II. There's unused capacity in machine tool, agricultural implement, textile machinery, tractor and motor shops of 10 to 20 per cent in which at least 600 more men could be employed.

Three-part Harmony — Codetermination in coal mining and steel plants has not helped to lower costs. German industrialists point out that, while the engineering and sales managers are appointed by the board of directors, the social, or labor relations, manager can not be appointed without the consent of the trade union. The labor relations manager tends to split the harmony in management since he must be re-elected or reappointed every five years, and depends on the support of the trade union for his continued tenure. Fortunately, the new codetermination law enacted for other industries shows no such strong trade union influences.

So far, German steel expansion has not been thwarted by dropping world market prices and foreign competition. Export trade is neglected for inland sales. But, continued expansion will depend on how well German metalworking products meet the test of world competition pricewise in 1953.

Freed German Steel Prices Mean More Imports, Less Exports

PRODUCT IMPORTS (IN TONS)	July	August	September
Pig Iron	16,090	18,694	1,634
Semi-finished steel	24,257	18,597	36,834
Merchant bars	10,486	16,794	40,133
Wire rod	9,289	9,001	7,519
Heavy plates	2,312	3,655	10,004
Medium plates	650	1,187	1,773
Sheets (0.5 mm to 3 mm)	4,154	4,852	12,450
TOTALS	67,236	72,780	110,347

PRODUCT EXPORTS (IN TONS)	July	August	September
Semi-finished steel	5,569	3,131	865
Merchant bars	30,279	27,969	26,573
Sheets	12,130	5,515	5,841
Tin plate	4,002	3,177	2,949
Galvanized sheets	844	435	301
TOTALS	52,824	40,227	36,529

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By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

A Detroit engineer plays the game of Seven Questions. He answers the seven most frequently asked about small, light or plastic cars, horsepower, frills and styling

DETROIT

WHY doesn't the auto industry provide light cars? What about plastic bodies? Why all the frills? How about smaller cars? Can't Detroit give buyers futuristic styling? Why the horsepower race? What are future cars to be like?

Auto executives probably hear those seven questions the most frequently. James C. Zeder, Chrysler Corp.'s vice president and director of engineering and research, gave some answers to them at a recent Tulsa, Okla., Chamber of Commerce meeting.

Good, But — Regarding light cars, Mr. Zeder admits the industry wants lighter cars because weight reduction offers the most promising means of getting better performance with greater economy and efficiency. Twin stumbling blocks to use of aluminum bodies block this path, however: Cost and fabrication difficulties. "Thousands of efforts and experiments have been made over many, many years to adapt this metal to modern auto body construction," he advises. Chrysler now is using more aluminum and magnesium castings in its cars and trucks than any other company in the industry, and is "very happy" with their performance. But "sheet aluminum in welded body construction is another story, and we haven't licked the cost and fabrication problems."

The plastic body is an answer to weight reduction and cost saving has likewise had a long history of experimentation. Its basic shortcoming over 15 years of trial has to do with production, and therefore cost. It must be molded and cured over forms. "There would have to be acres of forms to give us enough parts for a day's production," he says. "Imagine providing Plymouth with 4000 hoods a day if each has to be cured in a form for many minutes. Compare that with stamping the hoods from steel in merely seconds." Plastics are suitable for low volume custom sports cars, but "they just don't fit into the requirements of high production volume manufacture."

Steel, the Top—Amplifying on the basic suitability of steel, he says the industry will adopt plastics, or any other material for that matter, "whenever one comes along that beats steel on price, availability of supply and production speed and competes with steel's desirable strength qualities." If plastic or aluminum bodies were being used throughout the industry and a new material—steel—were to come along, says Mr. Zeder, "We'd all say: 'My, what a wonderful discovery.'"

To the reason for not removing the frills which add nothing to the performance or safety of a car, Mr. Zeder described an experiment conducted a few years ago on a standard Dodge sedan. The engineers removed all the chrome trim, took off the fancy bumpers and substituted painted truck bumpers, removed the body insulation, cut out rubber insulation where they could, installed cheaper, single-action shock absorbers, eliminated the fancy dash and all but the most needed instruments, took out the radio, fancy steering wheel, automatic heater controls, inside lights, one tail light, instrument light dimmer. They took the airfoam out of the seat, thinned the cushions down, used the plainest kind of upholstery and painted interior hardware. The carburetor silencer gave way to a basic air cleaner, thin rubber mats replaced carpeting, no lining was used in the trunk. But the engine, brakes, axles, suspension system parts and body structure remained at full quality. No reduction or cheapening in parts which would affect safety or performance was permitted.

Packing Tank Engines

Although the Army is cutting back medium tank production, (STEEL, Dec. 15, p. 75) Chrysler Corp. will continue to produce and assemble tank engines at the Michoud Ordnance plant near New Orleans. Several tank-manufacturing plants will shut down beginning July 1, 1953. Michoud shipped its first engines 11 months after Chrysler took over the former aircraft factory. From this plant, the engines shown here went to Chrysler's tank plant at Newark, Del.

Drawbacks — The result: "We had the worst, noisy, uncomfortable, ugly automobile you ever saw. One ride in it, and we couldn't get anyone but test engineers to ride in it or drive it again." Possibly more pertinent is the amount of money saved over a standard, luxurious Dodge. It would have cut $150 from price.

So if taking the deluxe features out of a car doesn't materially reduce the price, how about a really small car? "It couldn't be much cheaper merely because it would be small," says Engineer Zeder. "The cost of labor in any modern and complicated product is the largest percentage of the total cost. Building a car smaller would not change the labor cost

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very much." Parts would have to be about the same, and assembly line equipment, etc. would not be changed much. The industry, he says, has carried its work with small cars to the point where such cars could be put in production in a relatively short time. "But to build such a car for sale must mean, first, an assured market of large volume. There is as yet no evidence that such a market exists . . ."

For The Carriage Trade—Futuristically styled cars may look good in Sunday supplements, but how would such cars perform for the family's work? Would the driver be willing to jacknife himself to get in and out, or could the family take its vacations in such a gadget? Mr. Zeder asks.

On the subject of higher compression engines and higher horsepowers, Mr. Zeder contends that the burden of future engine performance improvements should not be on the petroleum industry that super octane fuels should not be necessary to get super power. His case in point is a 309-horsepower engine developed from the standard Chrysler power plant and using its regular compression ratio and using currently available premium gas.

The Reasoning — Horsepowers are not going up for the sake of speed and power, he says. He adds: "We have designed the engines and the car to give tremendous accelerating ability at normal speeds. We have done this because we feel that such performance is a positive safety factor." And by producing engines with great power reserves, "We can give you engines that do their normal jobs with ease. Because they are using only 40 to 50 per cent of their capacity at highway cruising speeds, they are more economical and they last longer."

What's ahead for new cars? Power steering nearly universal at modest cost; electric power to do everything from locking the doors to warming the windshield and window glass, tires and brake linings to last a normal car's lifetime, more riding comfort, quietness of operation; greater power and economy; transmission of power to the wheels by completely automatic means. These are some things the public can expect.

See for Yourself—To give the public a chance to get the answer for themselves to some of these questions is one of the purposes of Chrysler's "New Worlds in Engineering" show which has been put on before more than 9 million people in 20 United States cities. Its purpose is to provide a glimpse into the realm of automotive engineering so that some comprehension of the work can be realized.

This show can only be a substitute for visits to engineering laboratories, styling studios and proving grounds, but few people ever have the opportunity for these. So, the popular road show summarizing the high points of such visits has been developed.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	293,722	571,442
September	592,253	505,758
October	654,341	558,971
November	556,366	480,323
December		402,729
Total		7,179,161

Week Ended	1952	1951
Nov. 15	146,825	120,767
Nov. 22	129,224	80,489
Nov. 29	119,781	119,962
Dec. 6	129,005	116,932
Dec. 13	126,631	115,627
Dec. 20	120,000*	107,186

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

Chevrolet Optimistic

The automotive industry in 1953 can manufacture and sell profitably 5.1 million cars and 1.2 million trucks. So says Chevrolet General Sales Manager W. E. Fish in previewing his 1953 models to be on sale Jan. 9. Of the 6.3 million total, Chevrolet will be aiming to corner almost one-quarter 1.5 million units, split up as 1.1 million cars and 400,000 trucks. That would compare with 1952 Chevrolet production of 860,000 cars and 290,000 trucks.

Chevrolet, Mr. Fish said, before it wound up its 1952 model run made up every unit it had lost because of the steel strike and produced to the limit of its NPA quota. Its dealers, this close to new model introduction, might be expected to be working desperately to dispose of '52s. Instead they are asking for greater shipments of the present model so they will have something to sell.

Making only a limited attempt to disguise the company he had in mind, he said Chevrolet "has no intention of losing its leadership" which this year is amounting to 220,000 more cars sold than the nearest competitor.

Ford Denies Sales, Profit Figure

Ford took advantage of the glorious opportunity to publicize its size in the statement it made in answer to the well-circulated speculative story about its sales and profits.

Saying that not one of the 33 figure-guesses made was correct, Henry Ford II "admitted," however, that the "guess" that Ford is the second largest enterprise in the automotive industry is "absolutely correct."

Speculation was rife in Detroit circles that the story had been "leaked" preparatory to offering Ford stock to the general public. But Mr. Ford said, "It must be stated flatly that neither the Ford Motor Co. nor the Ford Foundation has any plan under consideration for the public sale of . . . stock."

New Buyers at Ford

A new director of purchasing of Ford Motor Co. has been named by Irving A. Duffy, purchasing vice president, to succeed Carl F. Unruh, who died recently. Charles H. Carroll who joined Ford as a steel buyer in 1918 has been elevated to the post. Since 1950 he has been general purchasing agent of production parts and materials. That position will be filled by Harold E. Joy.

With the appointment, Mr. Duffy announced that raw materials purchasing will be divided into two departments: Steel purchasing and basic raw materials purchasing. Heading the first will be Harold H. Compson, and James L. Toohey Jr. will direct the latter new department.

NEW PRODUCT DESIGNS DEMAND NEW MACHINING METHODS

This New Britain Automatic developed for contour facing jet compressor wheels

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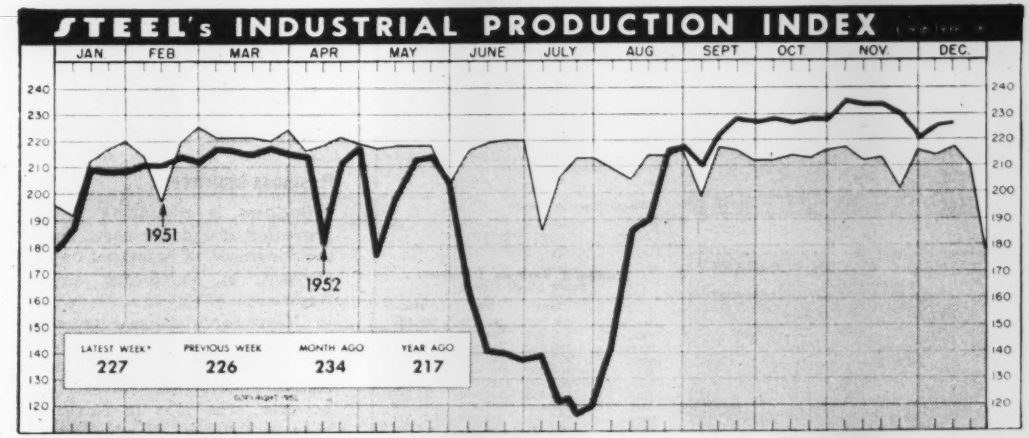


*Week ended Dec. 13

Based upon and weighted as follows: Steelworks Operations 15%, Electric Power Output 21%, Freight Car Loadings 29%, and Automotive Assemblies (Ward's Reports) 20%.

Metalworking industries raised their dividends in 1952, despite production losses from the steel strike. Industrial activity index edges up as electricity output soars

CONFIDENCE in the future and high production during most of 1952 are reflected in the cash dividends of leading metalworking industries.

Most durables industries this year are raising their cash dividends, despite tremendous losses due to the steel strike. The U. S. Office of Business Economics says that on Dec. 1 the nation's top six metalworking industries had issued dividend checks totaling $1142.5 million, or 1.4 per cent over payments in the first 11 months of 1951.

Here's Why—Effects of the steel strike plus defense and consumer demand are shown in the industry-to-industry percentage relationships in dividends. The iron and steel industry this year was able to increase payments a slight 0.08 per cent, despite strike losses. The automotive industry, on the other hand, was crimped by materials shortages even before the steel strike brought its operations to a near halt. Cash dividends by automakers issuing public reports dropped 4.4 per cent.

Increased payments in the other four major industries, although showing some of the strike's depressive effects, are more indicative of the nation's increased demand for defense and consumer goods. Machinery makers this year increased dividends 7 per cent, as expenditures on new production facilities climbed. Electrical machinery companies also increased payments—but only 2.9 per cent. Nonferrous producers raised their disbursements 3.1 per cent over the same months in 1951. The transportation industry (including aircraft) reflected its soaring production by advancing dividends a whopping 13 per cent.

Output Up — Still recovering from the Thanksgiving slump, the nation's assembly lines in the week ended Dec. 13 increased their pace slightly. STEEL's industrial activity index mirrored the rise by inching up 1 point that week to 227 per cent of the 1936-1939 average.

Steel Pouring Fast . . .

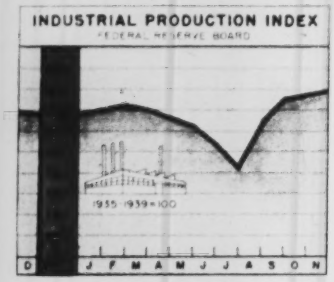
Nearing the end of the year with overloaded order books, steel mills continue to maintain near-record production. The American Iron & Steel Institute estimates that furnaces in the week ended Dec. 20 poured 2,196,000 net tons of steel for ingots and castings, compared with 2,207,000 net tons in the preceding week.

Outlook for Autos . . .

Passenger car manufacturers are looking ahead to high production in the first six months of 1953. Behind their optimism lie two welcome prospects: More materials and strong consumer demand. Industry quota for the half-year now is set at 2.5 million passenger cars. Actual output may rise above this figure as carmakers obtain conversion and foreign steel.

Consumer demand also favors the automotive outlook. *Ward's Automotive Reports* says that dealers' stocks of new cars are far under normal, despite high auto output in recent months. On Nov. 20 dealers had 282,462 new passenger cars on hand. This is a new post-steel strike high, but 35,582 units under the lowest level of dealers' stocks during 1951.

While most passenger car manufacturers maintained high output, change-overs to new models by General Motors Corp. slashed the industry total. In the week ended Dec. 13, manufacturers produced 92,844 passenger cars—or 2 per cent less than in the previous week. Truck production, however,

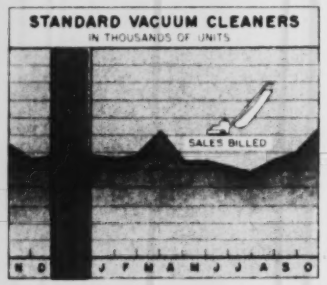


Industrial Production Index

1935-1939=100

	Total Production 1952	Total Production 1951	Iron, Steel 1952	Iron, Steel 1951	Non-ferrous 1952	Non-ferrous 1951
Jan	220	221	261	255	215	224
Feb	222	221	261	252	217	218
Mar	220	222	262	263	218	212
Apr	216	223	245	264	219	210
May	211	223	245	263	220	206
June	203	221	142	261	212	205
July	193	222	141	253	201	199
Aug	215	217	241	254	212	198
Sept	225	219	267	257	221	201
Oct	227	218	276	261	228	202
Nov	229	219		261		209
Dec		218		263		210
Avg		220		259		207

Federal Reserve Board

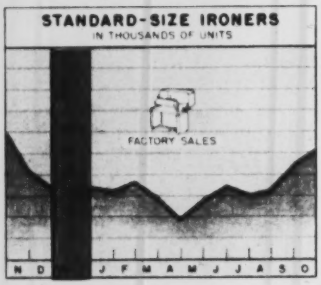


Standard Vacuum Cleaners

Sales Billed—Units

	1952	1951	1950
Jan	223,357	282,305	249,150
Feb	230,226	261,572	263,515
Mar	290,092	290,242	361,014
Apr	217,189	227,216	292,664
May	216,969	201,983	278,645
June	206,939	194,548	250,190
July	188,715	161,002	279,967
Aug	222,413	191,299	341,232
Sept	217,541	210,086	327,524
Oct	292,474	259,469	331,445
Nov		219,919	265,310
Dec		230,263	288,756
Total		2,729,104	3,529,414

Vacuum Cleaner Mfrs. Assn.

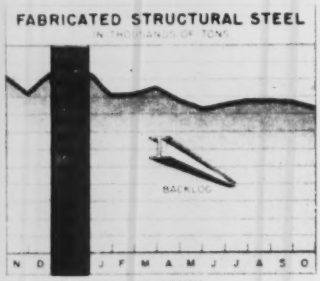


Standard Size Ironers

Factory Sales—Units

	1952	1951	1950
Jan	15,636	24,600	20,300
Feb	17,630	32,400	27,800
Mar	13,913	34,700	37,500
Apr	8,938	23,700	31,600
May	12,652	24,200	27,400
June	17,634	24,500	27,100
July	15,025	11,100	25,100
Aug	16,477	17,200	42,700
Sept	22,492	18,300	41,400
Oct	25,204	29,800	47,500
Nov		20,500	41,900
Dec		16,900	38,800
Total		277,900	409,200

American Home Laundry Mfrs. Assn.



Fabricated Structural Steel

Thousands of Net Tons

	Shipments 1952	Shipments 1951	Backlogs 1952	Backlogs 1951
Jan	244.9	214.0	2,416	2,404
Feb	246.4	163.6	2,408	2,590
Mar	268.8	237.1	2,501	2,602
Apr	240.7	234.1	2,450	2,508
May	244.2	234.5	2,263	2,771
June	125.5	257.1	2,261	2,636
July	138.3	204.4	2,361	2,688
Aug	226.3	236.9	2,363	2,748
Sept	227.6	228.3	2,342	2,580
Oct	268.5	239.0	2,266	2,641
Nov		218.2		2,435
Dec		202.7		2,670
Total		2,465.8		

American Institute of Steel Construction

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 24	Gray Iron Castings	Nov. 3	Ranges, Gas	Dec. 1
Durable goods	Sept. 22	Machine Tools	Dec. 15	Refrigerators	Dec. 8
Employ., Metalwkg.	Oct. 27	Malleable Castings	Nov. 3	Steel Castings	Nov. 3
Employ., Steel	Dec. 1	Pumps	Dec. 8	Steel Forgings	Oct. 20
Foundry Equip.	Nov. 24	Prices, Consumer	Dec. 1	Steel Shipments	Nov. 3
Freight Cars	Nov. 24	Prices, Wholesale	Dec. 1	Wages, Metalwkg.	Nov. 17
Furnaces, Indus.	Nov. 24	Radio, TV	Dec. 15	Washers	Dec. 1
Gear Sales	Dec. 15	Ranges, Elec.	Dec. 8	Water Heaters	Dec. 8

is still near 1952 record levels. U. S. truck assemblies totaled 27,822 units that week.

U. S. and Canadian companies in the week ended Dec. 13 assembled 126,631 passenger cars and trucks, compared with 129,005 in the previous week. In the week ended Dec. 15, 1951, U. S. and Canadian auto-truck output reached 115,627 units.

Business Improves . . .

Business is continuing to improve, but at a slower pace. That's the consensus of industrial buyers surveyed by Purchasing Agents Association of Chicago. Production in November continued to move upward, although employment stayed about the same. The association reports that less overtime, however, was paid in November than in October. Member buyers continue to show caution in filling inventories, as many believe price levels won't be maintained. The speed-up in deliveries is also whittling down purchasing; hand-to-mouth buying is becoming more prevalent. Inventories of finished goods are also on the downgrade. The association says only 19 per cent of its members reported that their inventories were higher on Dec. 1 than in recent months.

Hot Sales for Coolers . . .

You may have forgotten the heat wave that hit many areas last summer, but makers of air conditioners haven't. The Air Conditioning & Refrigerating Machinery Association estimates that sales of room air conditioners rose 44 per cent in 1952. Manufacturers' sales in 1952 are estimated at 341,000 conditioners, valued at $66.2 million. Last year, they sold 237,490 units for $45.8 million.

Range Sales Off . . .

Gas range manufacturers are finding their product sales are in line with the general uptrend in consumer demand for appliances. But stovemakers' production for 1952 will probably fall considerably under 1951. Gas Appliance Manufacturers Association reports that shipments of domestic gas ranges in November totaled 192,800 units, marking the sixth consecutive

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	105.0	105.5	104.0
Electric Power Distributed (million kwhr)	8,140	8,165	7,667
Bituminous Coal Output (daily av.—1000 tons)[2]	1,675	1,500	1,880
Petroleum Production (daily av.—1000 bbl)	6,410[1]	6,477	6,225
Construction Volume (ENR—millions)	$241.0	$344.2	$192.6
Automobile, Truck Output (Ward's—units)	126,631	129,005	115,627
TRADE			
Freight Car Loadings (unit—1000 cars)	710[1]	719	753
Business Failures (Dun & Bradstreet, number)	136[1]	120	143
Currency in Circulation (millions)[3]	$30,370	$30,274	$29,037
Dept. Store Sales (changes from year ago)[3]	+1%	−14%	−4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$16,360	$16,849	$16,492
Federal Gross Debt (billions)	$267.2	$267.3	$259.4
Bond Volume, NYSE (millions)	$19.9	$21.2	$14.0
Stocks Sales, NYSE (thousands of shares)	9,625	8,400	7,144
Loans and Investments (billions)[4]	$78.3	$78.5	$73.1
United States Gov't. Obligations Held (billions)[4]	$32.9	$33.0	$31.9
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	213.2	213.2	234.9
All Commodities[7]	109.6	110.0	113.6
All Commodities Other Than Farm and Foods[7]	112.8	112.8	114.5

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

month that shipments increased over the same 1951 month.

Nevertheless, the industry is 9 per cent below its shipments in the first 11 months of 1951. Range shipments on Dec. 1 totaled 2,005,100 units, compared with 2,206,900 in the same period of 1951.

Aluminum Shipments Soar . . .

As aircraft production soars skyward, production of aluminum products is attaining new post-World War II records. The Census Bureau reports that shipments of aluminum wrought products in October weighed 184 million pounds, or 28 per cent heavier than shipments in October, 1951. Indicating a recent production rise, aluminum products shipped in the first ten months of 1952 were only 7 per cent over shipments in the same months in 1951.

Less Coal Mined . . .

With an estimated 80-day supply of coal above ground, bituminous production is mirroring lower industrial and civilian demand by remaining under the 1951 average. The National Coal Association says that 1.7 million tons were produced daily in the week ended Dec. 6. In the comparable week a year earlier, miners dug a daily average of more than 1.8 million tons.

Primary Prices Slip . . .

Wholesale prices are continuing to follow the downtrend started in the spring of 1951. The Bureau of Labor Statistics says that primary market prices in November inched down 0.4 per cent to 110.7 per cent of the 1947-1949 average. Prices of metals and metal products receded 0.2 per cent, largely due to price declines for iron and steel scrap, zinc, tin and antimony.

Trends Fore and Aft . . .

Housing starts in November were 15 per cent above November, 1951 . . . . Shipments of steel barrels and drums are about 20 per cent under shipments a year ago . . . Freight car loadings are falling about 7 per cent under the comparable weeks in 1951 . . . Electric power production hit another all-time record in October . . . Most prices on Chistmas goods are lower than last year, but sales of retailers still are below their desires . . . The U.S. has ok'd construction of 134 TV stations since June . . . Shipments of magnesium wrought products in October dropped 19 per cent under shipments in October, 1951.

How to be right—always

When you buy . . . .

Cold Rolled Strip Steel

Approximately six months ago, Kenilworth adopted the policy of identifying all cold rolled strip steel shipped to customers by tagging each coil. Copies of the tags used are illustrated above. Because Kenilworth wants you to get the cold rolled strip steel you need and to be certain that you only pay for what you get, it is right to clearly classify the two kinds of cold rolled strip steel and tell you the advantages and disadvantages of both. Kenilworth stocks and sells both and is in a position to offer unbiased recommendations to help you select the steel which is best suited to your needs and which will cost you less in the end.

In cases where quality requirements are not too stringent, we have been able to save money for customers by suggesting a switch to Sheet Coil—fine where variation in physicals are permissible and gauge variations are not objectionable or where a fine surface finish is not required. In other cases, because its better physicals permit use of lighter gauges and because of assured maximum parts yield and greatly increased tool life, we've been able to show users how they can pay more for Thinsteel and still cut costs.

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• Tempered Spring Steel • Republic-Enduro Stainless Steel Sheets • Cold Metal Thinsteel • Tin Coated Steel in Coils • Shim Steel—Coils and Cut Lengths • High Carbon Cold Rolled Strip • Low Carbon Sheets and Coils • CMP Thinsteel Stainless Strip • Low Carbon Cold Rolled Strip

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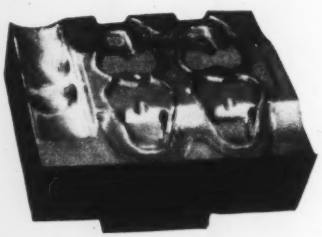
...there's more to a champion than the tape measure shows!

-American Halfback...
he gains ground when the chips are down.

Average Halfback...
he may measure the same... but he's stopped in the tough ones.

HARDTEM DIE BLOCKS* perform like "champions" in your production line!

Heppenstall Hardtem Die Blocks perform like "champions" because they possess those extras that result in superior quality. Their patented steel analysis resists softening and heat checking in service. Records from plants using Hardtem Die Blocks provide the following benefits for production:



- **Longer Production Runs**
- **Long Life of Dies**
- **Lower Overall Die Cost**
- **Less Down Time**
- **Holding of True Dimensions**

It will pay you to try Hardtem Die Blocks. Call Heppenstall Company, Pittsburgh 1, Pa. Sales offices in principal cities.

Heppenstall

The most dependable name in die blocks

Men of Industry

DWIGHT S. EWALT
. . . Rust Furnace V. P.-gen. mgr.

HERBERT EDLUND
. . . Roland Teiner V. P.-sales mgr.

DAVID E. FEINBERG
. . . gen. mgr. at U. S. Air Conditioning

Dwight S. Ewalt was elected vice president and general manager of **Rust Furnace Co.**, Pittsburgh, to succeed the late **W. R. Culbertson**. **O. D. Rice**, manager of operations, was elected a director and **Richard W. Ewalt** was promoted from assistant manager to manager of sales.

Liquid Carbonic Corp., Chicago, appointed **B. W. Goulding** vice president in charge of its Compressed Gas Division.

Edmund C. Horman was appointed regional sales manager for metropolitan New York area, **Baker-Raulang Co.**, Cleveland. Since 1948 he has been in sales executive work in New York with Towmotor Corp.

H. Earle Runion was appointed production manager, **Consolidated Engineering Corp.**, Pasadena, Calif. He previously headed his own firm of production engineers in Louisville.

Allen W. Walz was advanced by **Arma Corp.**, Brooklyn, N. Y., subsidiary of American Bosch Corp., to executive staff assistant to vice president-engineering. He was administrator of technical personnel and is succeeded by **Robert L. Ford.**

Herbert Edlund, formerly plant superintendent, was elected vice president and sales manager, **Roland Teiner Co.**, Everett, Mass.

At the Air Cleaner Division, **United Specialties Co.**, Chicago, **John Hamilton**, sales manager, was elected vice president in charge of sales, and **C. Frank Newburg**, plant superintendent, was named assistant to the vice president in charge of manufacturing.

Paul B. Wishart was appointed to the newly created position of general manager of **Minneapolis-Honeywell Regulator Co.**, Minneapolis, and also elected to the board of directors. He continues as vice president, a position he assumed in 1945, in charge of manufacturing in the company's Minneapolis plants.

James A. Currie, formerly first vice president of **Erie Foundry Co.**, Erie, Pa., was elected president. He succeeds his father, **D. Angus Currie**, who retains his duties as treasurer and becomes chairman of the board.

Roland H. Cline was appointed manager, Charlotte, N. C., office, **Allis-Chalmers Mfg. Co.'s** general machinery division. He succeeds the late **William Parker.**

David E. Feinberg was named general manager of **United States Air Conditioning Co.**, Minneapolis, succeeding his father, the late **A. A. Feinberg**. A vice president since May, 1951, Mr. Feinberg also has served as sales manager of the refrigeration division.

Edward R. Devlin was elected vice president, **Atlas Iron & Steel Co. Inc.**, steel fabricator, Philadelphia.

William E. Vaughn was named assistant to the vice president in charge of sales at **American Can Co.**, New York. He has been assistant general sales manager.

A. P. Fergueson and **E. L. Potter** were appointed to the newly created positions of assistant managers of sales, **Houdaille-Hershey Corp.**, Detroit. Mr. Fergueson assumes charge of automotive sales and Mr. Potter will be in charge of sales, nonautomotive fields.

Robert M. Coyner was appointed midwestern sales manager, **White Metal Mfg. Co.**, Hoboken, N. J. His headquarters are in Indianapolis.

Robert T. Smith was appointed executive salesman by **Whittaker, Clark & Daniels Inc.**, New York. **Arthur N. Sudduth** became manager of the company's new abra-

M. D. SANDINE
Continental's St. Louis plant mgr.

ARTHUR H. KULJIAN
V. P. eng., Kuljian Corp.

F. J. MEYER
. . . div. sales mgr. at Cutler-Hammer

sive division. Mr. Sudduth was formerly vice president of eastern sales and production and a director of J. H. Rhodes & Co.

M. D. Sandine was appointed plant manager of **Continental Can Co.'s** two can plants in St. Louis. He previously was plant manager at the Syracuse, N. Y., plant and general manager of the company's defense plant at Coffeyville, Kans. **C. F. Marquard** was made plant manager at the Milwaukee metal container plant.

W. Denis Kendall has joined **Brunswick Ordnance Corp.**, New Brunswick, N. J., subsidiary of Mack Trucks Inc., as executive vice president and general manager.

Barium Steel Corp., New York, appointed **Bayard A. Allis** director of public relations.

Arthur H. Kuljian, chief mechanical engineer for **Kuljian Corp.**, Philadelphia, was elected vice president in charge of engineering. He has had wide experience in design and engineering of steam electric power stations, industrial plants, boiler house extensions and chemical plants, both in this country and abroad.

Bassick Co., Bridgeport, Conn., added **Gerald Walter** to its Detroit office as sales engineer.

Jack J. Rowe was made district manager, Cleveland area, for **DeWalt Inc.**, subsidiary of American Machine & Foundry Co.

F. J. Meyer was appointed division manager, heating device sales, **Cutler-Hammer Inc.**, Milwaukee. Formerly a member of the company's headquarters sales department, in 1951 he was made specialist in electric heating devices. **R. R. Smith** becomes division manager, renewal parts sales.

John K. Dustman succeeds the late **Walter A. Davis** as manager of export sales in the New York office of **Youngstown Sheet & Tube Co.**

J. R. Weaver was made manager of manufacturing and engineering for the Springfield, Mass., plant of **Westinghouse Electric Corp.'s** appliance division. He succeeds **C. B. Dick**, transferred to Pittsburgh. **P. Y. Danley** was made commercial manager of Springfield products and also responsible for all defense products made in the plant.

Appointments at **AiResearch Mfg. Co.**, Los Angeles, division of Garrett Corp., include **Helmut Schelp**, named to investigate and screen new products for manufacture. His duties also include market research and new applications for AiResearch products. **W. T. von der Nuell** was made senior project engineer.

Bellows Co., Akron, appointed **Henry K. Moore** field engineer in the southern Philadelphia territory, and **Frank R. Adams** field engineer in the Saginaw, Mich., territory.

John F. Green, Chicago district sales manager, **Central Scientific Co.**, Chicago, was named general sales manager. **Jack N. Widick**, former assistant to the general sales manager, has taken over a sales territory covering Indiana and parts of Kentucky and Illinois.

James W. Wilcock was appointed assistant general sales manager for **McKay Co.** He will have headquarters in Pittsburgh. Mr. Wilcock formerly handled the sale of McKay products in the Detroit area. He was transferred to the main offices, Pittsburgh, in July, 1951, where he has served as special assistant in sales.

Pittsburgh Steel Co., Pittsburgh, appointed **Lawrence L. Weber** assistant to the general traffic manager.

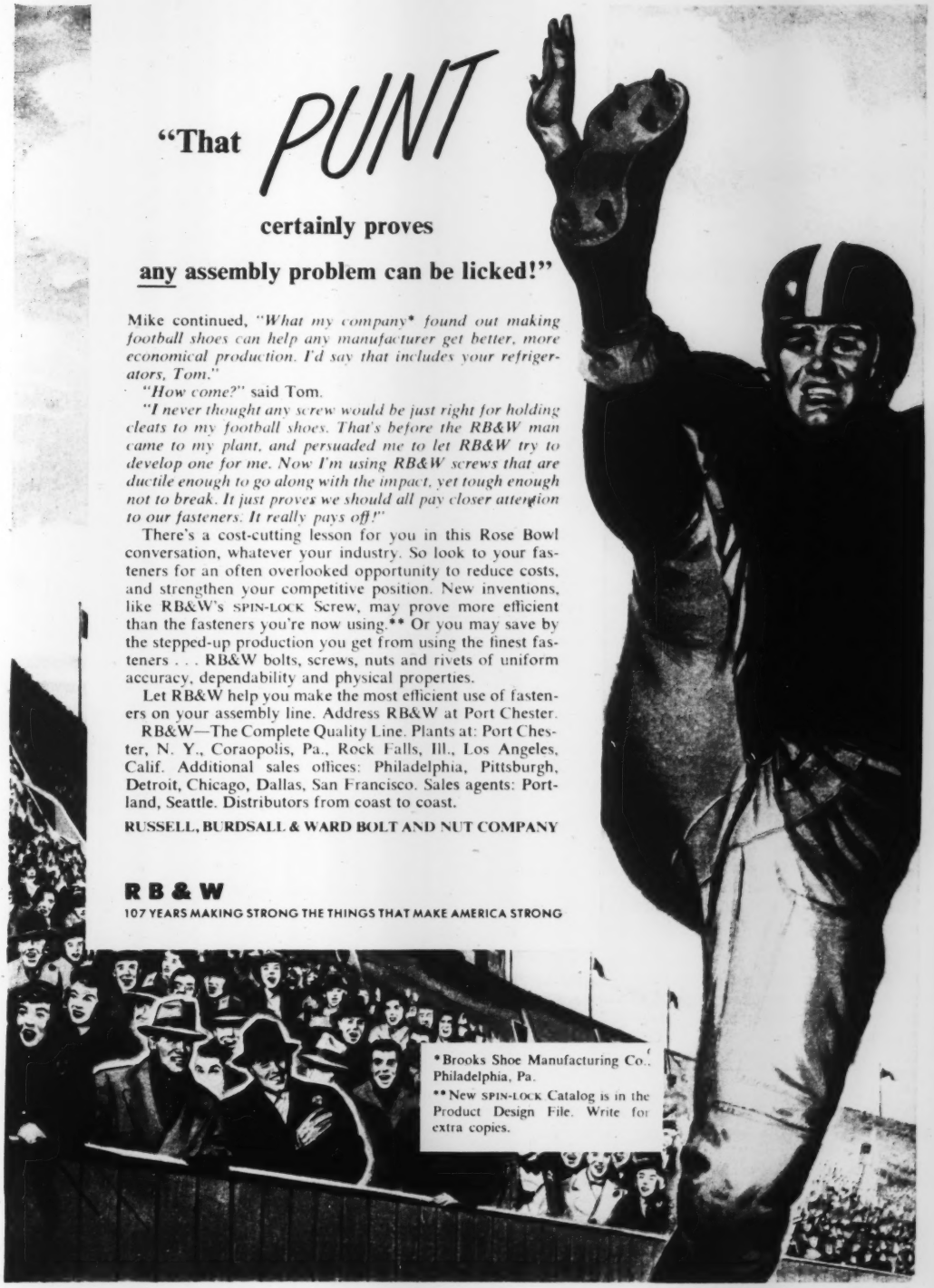
V. M. Homan was appointed special sales representative of **Wisconsin Steel & Tube Corp.**, Milwaukee.

Henry F. Colt Jr. was appointed a district manager of **Air Reduction Magnolia Co.**, division of Air Reduction Co. His headquarters will be El Paso, Tex.

William A. Kerr was elected general manager of **Tracerlab Inc.**, Boston. Formerly general sales manager, Mr. Kerr is also a vice president of Tracerlab and a director of the firm's x-ray subsidiary, Keleket X-Ray Corp., Covington, Ky.

John C. Virden, chairman, John C.

"That PUNT certainly proves any assembly problem can be licked!"



Mike continued, *"What my company* found out making football shoes can help any manufacturer get better, more economical production. I'd say that includes your refrigerators, Tom."*

"How come?" said Tom.

"I never thought any screw would be just right for holding cleats to my football shoes. That's before the RB&W man came to my plant, and persuaded me to let RB&W try to develop one for me. Now I'm using RB&W screws that are ductile enough to go along with the impact, yet tough enough not to break. It just proves we should all pay closer attention to our fasteners. It really pays off!"

There's a cost-cutting lesson for you in this Rose Bowl conversation, whatever your industry. So look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New inventions, like RB&W's SPIN-LOCK Screw, may prove more efficient than the fasteners you're now using.** Or you may save by the stepped-up production you get from using the finest fasteners . . . RB&W bolts, screws, nuts and rivets of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W at Port Chester.

RB&W—The Complete Quality Line. Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents: Portland, Seattle. Distributors from coast to coast.

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107 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

*Brooks Shoe Manufacturing Co., Philadelphia, Pa.

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THOMAS J. MENZEL
. . . Hanson-Van Winkle electroplating mgr.

W. W. GREENWAY
. . . a V. P. of Pressed Steel Car

DAVID B. ZIPSER
. . . Tenny engineer

Virden Co., was elected a director of **Diamond Alkali Co.**, Cleveland.

Hanson-Van Winkle-Munning Co., Matawan, N. J., appointed **Thomas J. Menzel** manager, electroplating section, responsible for experimental and sample plating carried out for customers at its plating laboratory. Mr. Menzel has been serving as plating chemist.

Steven C. Van Voorhis was made manager of advertising and sales promotion for **General Electric Co.'s** New York apparatus district, and **James L. Townsend** assumes the same position in the southeastern apparatus district with headquarters in Atlanta.

R. A. Hamilton, formerly with Lockheed Aircraft Corp., has become associated with **Farrand Optical Co.**, New York, as consulting engineer in the optical tooling division.

Edmund C. Horman was appointed regional sales manager for the New York metropolitan area, **Baker-Raulang Co.**

W. W. Greenway was elected a vice president, **Pressed Steel Car Co. Inc.**, Chicago. He will make his headquarters in Los Angeles where the company's newest acquisition, Axelson Mfg. Co., is located. Mr. Greenway previously has served with the company's Mt. Vernon Car Mfg. Division and Rice & Adams Equipment Division, and in December, 1951, was made general manager of the Chicago Steel Tank Division, Chicago, which he leaves to assume his new position.

J. Howard Batchelor was made general manager and **Edwin A. Kraft Jr.**, sales manager of **Liberty Mfg. Co.**, Santa Monica, Calif.

F. F. Osborne was appointed general sales manager of **Smith-Blair Inc.**, South San Francisco, Calif.

Everett C. Gosnell was made sales manager of **Centrifix Corp.**, Cleveland.

J. S. Roscoe was appointed executive vice president in charge of business administration by **Lincoln Electric Co.**, Cleveland.

Tenney Engineering Inc., Newark, N. J., appointed **David B. Zipser** as chief engineer of its refrigeration division. He previously served with Bush Mfg. Co. as research engineer and later chief engineer.

H. S. Glasby was appointed Philadelphia district representative for **Rockford Screw Products Co.** to cover Maryland, Delaware, eastern Pennsylvania and part of New Jersey. For the last seven years he has been purchasing agent for Nice Ball Bearing Co.

Fred Rahe, head of sales management division, **Trailmobile Inc.**, subsidiary of Pullman Inc., was promoted to assistant manager of fleet sales with headquarters in New York. **Finis H. Haskins** succeeds Mr. Rahe at Cincinnati.

International Business Machines Corp., New York, elected **Gilbert H. Scribner** to its executive and financial committee.

William Patton joined **Pastushin Aviation Corp.**, Los Angeles, as controller.

OBITUARIES...

Kenneth B. Rowell, 52, chief engineer, **American Locomotive Co.**, Schenectady, N. Y., died Dec. 12.

Francis A. Bell, 47, a vice president of **Cleveland-Cliffs Iron Co.**, Cleveland, died Dec. 11.

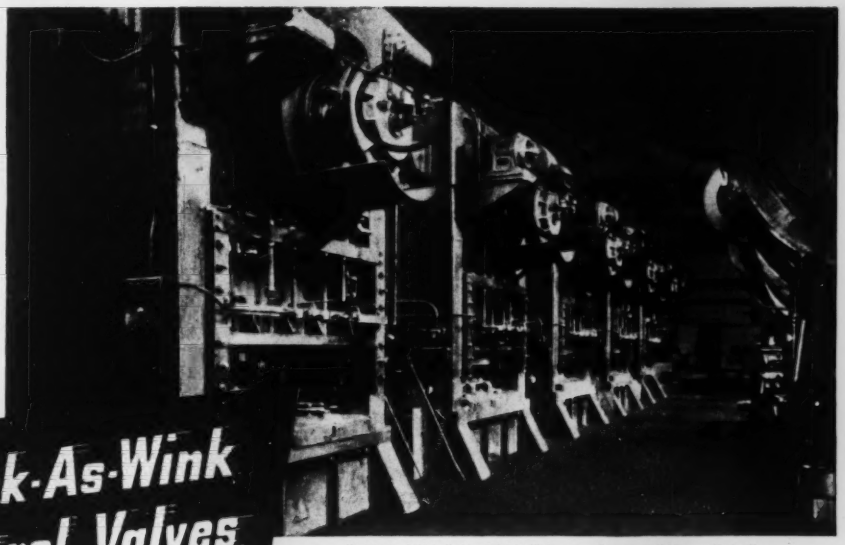
Justin A. Fitz, 60, advertising director, **Sperry Gyroscope Co.**, Great Neck, N. Y., died Dec. 9 after 35 years with the company.

George J. Graves, 67, president, **Graves & Son Boiler & Mfg. Co.**, Jamestown, N. Y., died Dec. 6.

Samuel T. Ball, 62, for 19 years assistant general superintendent at Indiana Harbor, Inc., **Youngstown Sheet & Tube Co.**, died Dec. 8.

Alvin M. Smith, former secretary of Southern Industrial Distributors' Association, and president of **Smith-Courtney Co.**, Richmond, Va., died Dec. 5.

L. A. Rawson, 53, vice president, **Union Steel Co.**, Los Angeles, died Dec. 9.



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Quick-As-Wink Solenoid Air Valves on Battery of Heavy Duty Presses.

Quick-As-Wink Valves on Tire Mold Handling Machine.

Quick-As-Wink Valve on 8-spindle Automatic Chucking Machine.

proven dependable performance that keeps you out of "post-mortems"

● The easiest and surest way of preventing break-downs, repair costs, material spoilage, machine damage, operator injury, lost production, customer ill-will — and their "post-mortems", is to install Quick-As-Wink Valves on *all* your air and hydraulic controls.

Positive and fast acting, every valve is designed and built to meet the most exacting requirements and individually tested before being shipped. All operating parts are in pressure balance eliminating any tendency to creep or crawl. Danger of "repeating" — major cause of accidents, break-downs and other trouble — is practically eliminated. Most foremen and superintendents know there's nothing better, for long, dependable, trouble-free service than Quick-As-Wink Control Valves. Can you afford to gamble with less?

Quick-As-Wink
AIR AND HYDRAULIC
Control Valves

Hand, Foot, Cam, Diaphragm and Solenoid Operated

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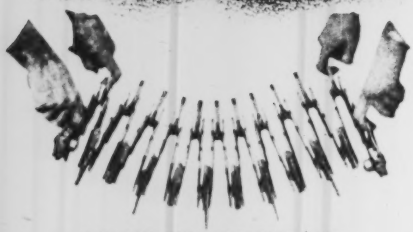
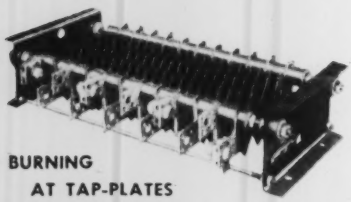
SAVE UP TO 1/6 ON UP-KEEP

Periodic Tightening of Clamping Nuts Eliminated—With EC&M Tab-Weld Plate Resistors

1. INSPECT MOTOR
2. CHECK CONTROL PANEL
3. ADJUST BRAKE
4. TEST LIMIT STOP
5. EXAMINE MASTER SWITCH
6. TIGHTEN RESISTOR NUTS



NO BURNING AT GRID-EYES



NO BURNING AT TAP-PLATES

EC&M TAB-WELD Plate Resistors provide the opportunity to reduce upkeep by a new construction which has shown excellent operating results.

This construction brings grid-eyes into intimate contact, eliminating the electrical connectors previously required between grids. Spot welding the tab-ends of the grids maintains the intimate contact and provides a continuous path without depending on the pressure of the end clamping nuts. Burning at tap-plates is also eliminated by spot welding the tap-plates to the ends of the mated grids.

In addition to elimination of trouble in concealed areas of the sections, EC&M TAB-WELD Plate Resistors have other cost-saving features. These are: stabilized resistance value, simplified tap-shifting with several tap-plates permitting convenient adjustment for best motor operation, metal tap-plate identification tags, corrosion-resisting qualities, etc. *Write for Bulletin 942 giving complete details.*

A reduction in preventive maintenance is a plus value — specify EC&M TAB-WELD Plate Resistors.

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Production AND Engineering NEWS AT A GLANCE

HOW THEY BUY—When the research department of STEEL recently tabulated the results of a survey on the purchasing of small tools, they had these answers to one of the questions. The question asked what factors the purchaser felt were most important in helping them choose the distributors from whom they are buying cutting tools. Best service was mentioned by 84.3 per cent of the total. Next was best deliveries—75 per cent. Third item mentioned was brands carried—69.4 per cent. Then followed past experience with distributor, largest stocks, price and friendship in that order.

ONE FOR THE MONEY—When they were faced with the difficult job of machining jet engine aft frames, Solar Aircraft discovered they could save money in the long run by investing in a special-purpose machine. The single machine would take the place of three standard units. Savings came in floor space taken to do the job. Additional gains were made in labor and handling cost when the job was done on one machine and in one chucking. Production time also was drastically reduced. p. 64

STANDING BY—Automakers are finding a lot of jobs for plastic dies since the first test runs on limited production items proved successful. An interesting application that keeps production going on Mercury passenger cars uses a plastic die for standby service. While the regular steel die is being repaired the plastic die stamps out hoods.

HIGH POLISH—Advantages resulting from change to finishing stainless rolls on special machine include reduction in machine cycle time and more production per roll. Instead of a grinding or turning procedure, the method used is one of buffing the roll diameters with abrasive stones. Extremely high grade surfaces are possible. Limits can be held within tolerances almost tight enough to choke. In addition, several different types of surface can be obtained with the same machine. p. 66

ON THE MACHINE FRONT—National Machine Tool Builders' Association estimates the 1952 shipments of the industry to come to $1200 million. This is in contrast to the total of $249 million for the pre-Korea year, 1949. The association also says the industry backlog continues to be further reduced. At the present time it totals, for the industry as a whole, about 11 months' production at current rate, as compared to 18 months' production at the start of 1952.

PLATING ON ALUMINUM—Researchers at Aluminum Company of America found that addition of a small amount of iron to the alkaline zincate immersion dip used as a pretreatment for plating on aluminum materially improved the subsequent electroplate. About 1 to 2 grams per liter of ferric chloride crystals are sufficient. Adding 10 grams of Rochelle salt per gram of ferric chloride keeps the iron dissolved in the highly alkaline bath. Addition of iron is especially valuable in plating on aluminum die castings because of difficulties from greater percentages of copper, silicon and magnesium usually found in casting alloys.

FRETTING STOPPED—Molybdenum disulphide looks promising as an inhibitor for fretting corrosion based on recent NACA tests. Indications are that fretting is caused not by oxidation but by loosening of finely divided material. Factors such as vibration, oxygen, lubrication, hardness, load and surface roughness influence this surface deterioration.

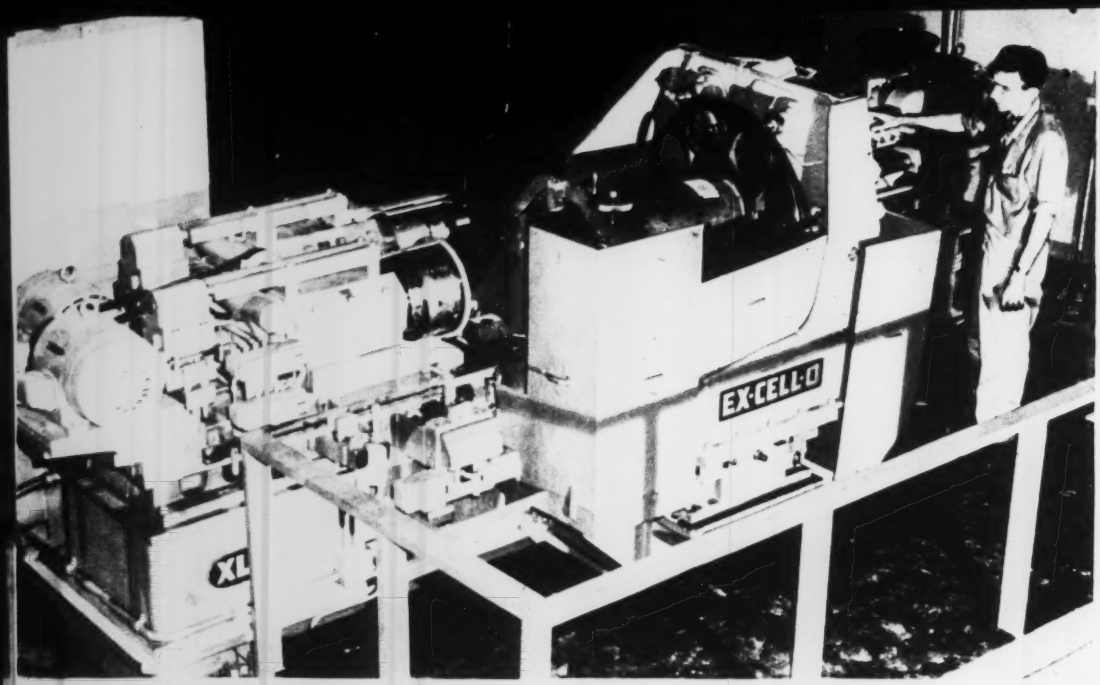
BRAZES LOOSE FITS—A new copper brazing paste containing iron developed by the Glidden Co. permits assembly gaps of up to 0.005-inch, yet gives satisfactory bridging and high joint strength. The material permits joining of rather loosely fit stamped parts and speeds ordinary assembly by allowing hand push joining rather than mechanical or hydraulic press assembly.

FROM IDEAS TO FACT—Work at International Harvester is providing practical information about the shell molding process. It's taking the place of speculation and substituting operating experience. The methods of all the phases of shell molding are being checked. An extensive investigation of the various shell making machines that are available or that will be available in the future has been made. Work here and in other plants will turn this new and spectacular field into a tool for many to use in everyday production. p. 68

ULTRASONIC DESCALING—Allegheny Ludlum is currently studying descaling of stainless steel using an ultrasonic transducer. Radio frequencies in range of 23,000 to 26,000 cycles (just above audible sound range) are being tested in effort to determine best way to get stainless cleaner, quicker.

LOTS OF BOUNCE—In this age of superlatives another is added in the announcement by Erie Foundry Co. that it has just shipped a forging hammer rated at 50,000 pounds. It actually carries the same rating as three other hammers built by the company in World War II but is more rugged than its predecessors. Shipping weight of the hammer, without dies, exceeds 800 tons. It stands about 30 feet above the floor with 16 feet below floor level. One man controls the hammer using a foot treadle or hand levers. Right now the hammer will work on aircraft forgings but it's expected that a lot of civilian jobs, impossible to do on present equipment, will eventually be produced on the giant.

Metalworking Outlook—p. 27 *Market Outlook—p. 99*



This boring and facing machine chops 87 per cent off the time previously required to machine jet engine aft frames. The complete cycle is automatic

Manufacturing Shift Slashes Production Time

And that's only part of the story. With a special machine doing the job, critical floor space and labor are saved. One chucking takes the place of three

By J. A. LOGAN
Chief Production Engineer
Solar Aircraft Co.
San Diego, Calif.

A SHIFT in manufacturing methods used in turning out jet engine parts is under way. The move is from the one-at-a-time techniques to high production methods.

The shift is evident in numerous activities, such as conveyorized production lines, increasing use of high production machine tools such as multiple spindle drills, and in the use of highly specialized tooling.

Special Machines—A major example, however, is the gradual introduction of special-purpose, high-production machine tools. These are the units which contain in themselves all of the special fixtures, tooling and machine tools for a complicated sequence of operations and which are automatic or semiautomatic.

Important jet component manufactured in quantity by Solar Aircraft Co., San Diego, Calif., is the aft frame for the General Electric J47 engine. The frame is a basic structural member of the J47. It carries all engine components aft of the compressor and is the central portion of the engine's high temperature end. It is designed with extremely close dimensional tolerances to properly accommodate relative thermal expansion of parts adjacent to it.

Tight Tolerances — Frame is a large alloy steel weldment, mainly made of type 321 stainless steel. It weighs about 185 pounds, is 44 inches long, and has a maximum diameter at the support plate flange of 36⅝ inches. This unit must be machined to tolerances normally encountered only in castings and forgings in the neighborhood of ±0.001-inch.

In addition the unit consists of many diameters. All must be concentric. Close tolerances include a squareness requirement of 0.0003-inch per inch, a concentricity requirement of 0.005-inch full indicator reading, and a flange which must be square with the central axis within 0.00015-inch per inch.

Three Jobs—Internal machining of the frame involves three separate portions of the unit. One is boring and facing the forward flange. The second is boring, counterboring, facing and chamfering the damper bearing stiffener. The third is boring, counterboring, fac-

ing and finish boring to within ±.001-inch of the aft bearing housing ring.

Requirements of the job make it desirable to do as much machining as possible with one chucking, to meet concentricity requirements. Solar was forced to do the job, however, in a vertical position on standard vertical turret lathes with three separate operations and three chuckings.

One for Three—When production of J47 engines was sharply expanded, one effect on Solar was the stepping up of requirements for aft frames by about 150 per cent. This posed several immediate problems. Space shortages made it impossible to supplement the existing vertical turret lathe operations. This was undesirable also because of the difficulty of maintaining quality with three chuckings.

Desire to do internal aft frame machining with one chucking—and the economy of one machine instead of three—led to the idea of designing an automatic special purpose machine for the work.

Advantages—The engineers embodied their suggestions for a new machine in a proposal to combine all aft frame internal machining on one specially designed transfer boring machine. This would have three major advantages: 1. Concentricity would be assured, 2. Space would be saved (one machine would replace three) and 3. Production costs would be lowered. It was estimated in advance that combined operations should require only 30 per cent of the previous time standard.

Three Heads—Worked out by the engineers at Ex-Cell-O Corp., Detroit, in co-operation with Solar, the new unit is a two-position, triple-headed transfer boring machine. It is built on a welded base that carries three slides. The center slide traverses the work fixture between the two longitudinal slides. One of these carries two boring and facing heads; the other carries one boring and facing head and a retractable locator plug.

The heads are carried in Ex-Cell-O precision spindles with motor vibrations isolated by a V-belt drive. All the slides travel on hardened ways and are fed by hydraulic power actuated by a complex electric control circuit. All heads are driven by 5-hp motors.

Controlled Indexing — The aft frame is located in the holding fixture by the outer diameter of the forward flange and the inner diameter of the aft bearing housing ring in a free position. With the locator plug in place, floating hydraulic clamps grip the burner plate flange, and the locator plug is then withdrawn.

This way the central axis of the part is determined, and all future indexing is related to the bores determined in this machine.

Automatic Cycle—Carbide tooling is used throughout, and coolant is supplied through a halo mounted around the boring heads. Cutting speeds are in the range of 400 sfm. Machine cycle is completely automatic after the support plate flange is located and clamped.

The machine is 14 feet by 8 feet 8 inches, which is 70 per cent less space than would have been required with the other method. It weighs 38,000 pounds and costs $90,000.

Sequence—Machine goes through the following cycle of operations:

The aft frame is loaded in the first station, using the locator plug

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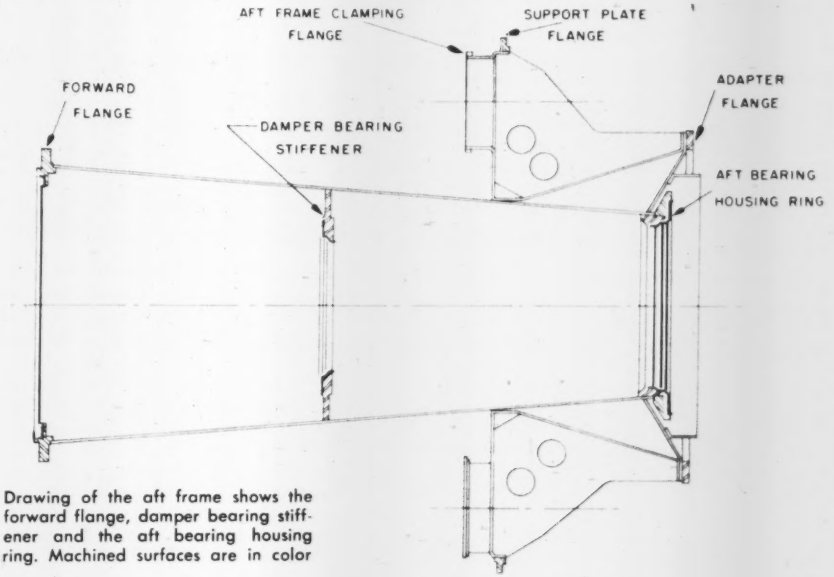
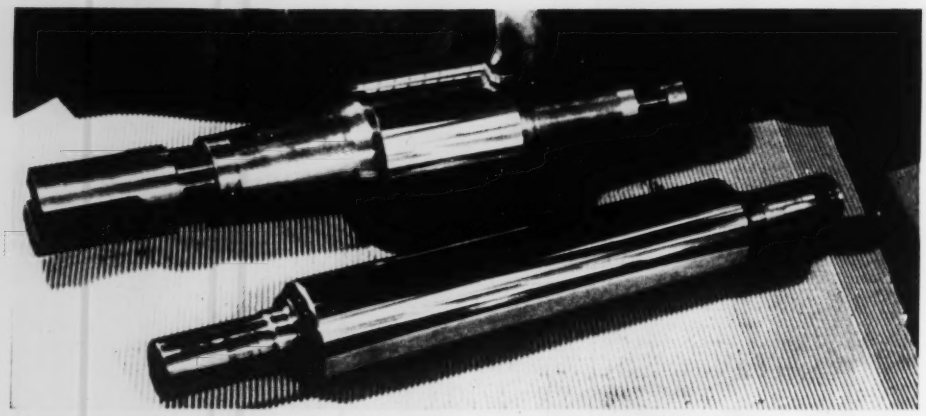


Drawing of the aft frame shows the forward flange, damper bearing stiffener and the aft bearing housing ring. Machined surfaces are in color



Superfinished roll surfaces shown measure about 1 micro-inch rms. Rolls with a single or double crown from 0.001 to 0.007-inch are also handled

Special Machine Improves Stainless Roll Finish

Advantages resulting from change to Superfinishing include: Forty per cent reduction in machine cycle time, more production per roll and reduction in buffing requirement for finishing sheets

DEVELOPMENT of a special machine for Superfinishing of mill rolls for stainless steel represents a big step toward the reduction of this maintenance cost. Tests were conducted prior to the purchase to determine suitability of this method for roll finishing. Additional tests are still being carried on in the user's mill but the results to date open the door to many new considerations in mill roll finishing.

One of the more serious problems is the relatively short service life of a mill roll. Previously the finishing had been done by grinding. The result was a highly reflective surface with the proper surface roughness. Yet, the life of the roll, before it required refinishing, was too short.

Three factors in the grinding process seem to be at the base of the trouble.

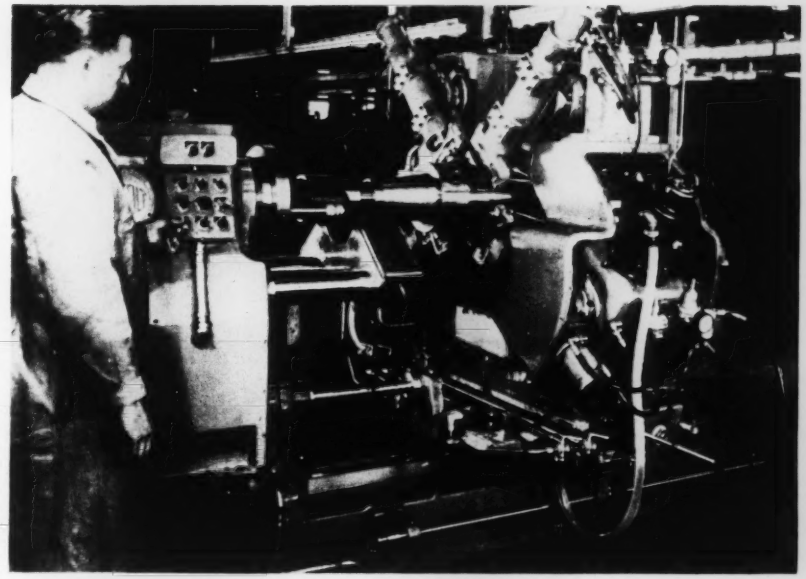
Leads List—First, the heat developed in grinding will actually cause a minute flow of metal on the outside surface. This flow will cover any existing inclusions in the base metal and possible defects from earlier grinding operations. Further, the outer surface is amorphous or soft metal and does not have either the hardness or the wearing quality of the base metal. Thus, the short life.

Next factor deals with the surface roughness. In grinding, surface roughness is measured in terms of peaks and valleys created by the line action of the wheel. Even with a surface finish of less than 1 microinch rms this condition is still present. In rolling, these peaks and valleys will transfer themselves to the rolled stock, in reverse. Valleys on the roll will become peaks on the rolled stock and can be easily buffed off in a later operation. But, peaks on the roll will become valleys on the stock, and these below-surface imperfections call for a longer buffing operation.

Finally, there is the ever-present problem of trying to reduce the roll refinishing time. Of course, the time does depend on the material to be finished, the required surfact roughness, the available equipment and the like. Yet, refinishing requires man and machine hours and it is a perpetual problem that requires continual study.

Thus, there are three entirely separate problems that might well be solved by a careful investigation of the generally accepted method of finishing.

Theory Favorable—From an academic standpoint, the Superfinish process seemed to be the logical answer. The area contact of the Superfinishing stone would develop much less heat than the line contact of the grinding wheel. This would eliminate the flow of metal and the soft outer surface. With the stone dressed to the working radius it would improve the geometry of the roll. Because of the



Loading and unloading workpiece is simplified by power operation of the front and rear slides. Operator is shown retracting slides for unloading

By M. B. HANKS
Gisholt Machine Co.
Madison, Wis.

scrubbing action of the stone the amorphous metal left by previous grinding would be removed and the peaks of the surface would be scrubbed away to leave the remaining roughness all below the roll surface.

To test out these suppositions a number of sets of rolls were Superfinished in the laboratory. In each case these were alloy steel rolls, measuring 64-68 Rockwell C hardness. Each had been previously ground to 15-20 microinches rms. Even in the laboratory the Superfinishing time was less than half the time allowed previously for grinding. This was most encouraging and suggested a real reduction in production costs.

Proved in Production — These test rolls were then returned to the mill. In one test it was found that a set of Superfinished rolls ran 36 production hours, as against less than 8 hours for a similar set of ground rolls. In another test it was found that the Superfinished rolls would handle 280,000 pounds before refinishing, as against a normal of 50,000 to 100,000 pounds with ground rolls.

Even the rolled stainless strip was tested. The salt spray test showed that there were less iron inclusions in the rolled strip. This was proved by the greater length of time required to oxidize the surface of strip rolled with the Superfinished mill rolls.

With all this apparent success there was a problem in the appearance of the rolled stock. The pattern of the Superfinished rolls was, of course, transferred to the strip stock. This was a reverse of the pattern of each roll. On first glance the pattern made the strip look rougher and it was thought that this might add to the problem of buffing.

Appearance Deceiving—The reverse was actually the case. The Superfinished rolls left a better buffing surface. The roughness on the rolls was below the surface. In transferring the pattern to the rolled stock this left the roughness above the surface. This roughness was found to be only photographically deep and a reflective surface could actually be obtained in less buffing time.

Based on these findings a special model 78 mill roll Superfinisher was ordered to handle a variety of sizes of rolls. The machine was designed to handle 60 inches between centers, with 36 inches as the maximum length of the roll work surface. Swing, or maximum roll diameter, was 20 inches.

Completely Automatic—Machine

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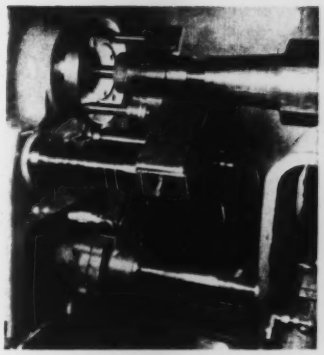
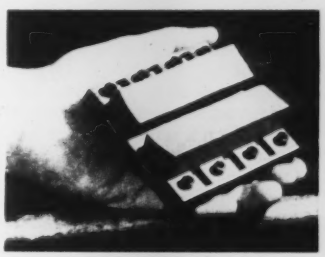


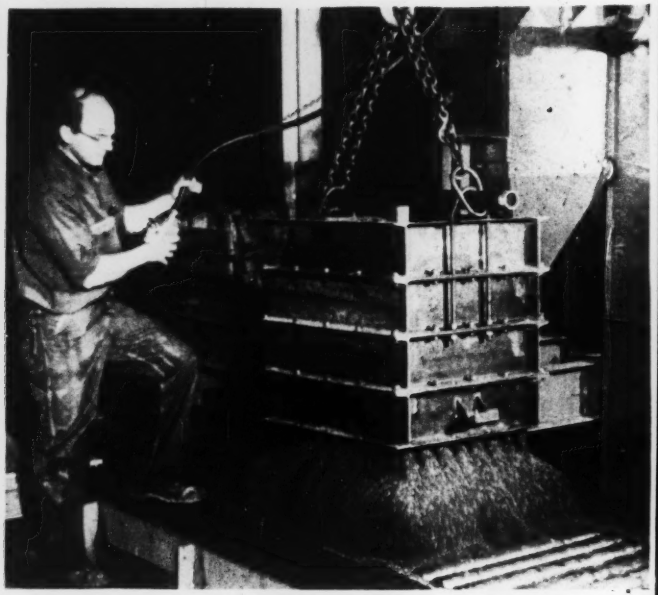
Mill rolls are supported on their own bearing journals and driven from spindle adapter. Support is adjustable



Quick change stoneholder, complete with two Superfinishing stones. One unit is used on each of four heads

By GARNET P. PHILLIPS
General Supervisor, Foundry Research
International Harvester Co.
Chicago

SHELL MOLDING DATA GROWS



Metal grit pours from the bottom when flask is shaken out. Metal bars retain shells and castings during shakeout

Development work at International Harvester provides a wealth of practical information about the shell molding process, replaces speculation with operating experience

EXPERIENCE gained in approximately two years of experimental and developmental work enables International Harvester Co. to make a realistic appraisal of the advantages and pitfalls of shell molding. Throughout this article the process will be referred to as "Contour" molding since that is the name copyrighted by the company to cover its shell molding activities.

In the process heated metal patterns mounted on metal plates are covered with a mixture of fine silica sand and powdered phenol-formaldehyde resin. The dry powdered resin in the mixture in contact with the hot pattern and plate melts and forms a soft shell about 3/16-inch thick. The pattern and plate are inverted to permit excess sand-resin mix to fall away. The pattern, plate and adhering shell are turned over so that the shell is on top. They are placed in an oven for a curing or baking operation, are removed from the oven, the shell is pushed off the plate and pattern with ejector pins, cooled and assembled with another shell to form a mold, put in a flask, backed up with metal shot, grit or sand and poured off in a conventional fashion.

This new molding process has been under study by the foundry section of International Harvester Co.'s Manufacturing Research since 1949. In the latter part of 1950 research work on the process was actively begun in the research foundry, and since then has been carried on continuously.

Process Advantages—On smaller sized castings, which may be classed as squeezer work, the dimensional tolerances that can be held are in the range of 0.002 to 0.003-inch per inch of dimension. On larger, more complex castings the dimensional tolerances may be larger. This close dimensional tolerance, plus relatively fine finish, lead to the following advantages of Contour molded castings compared with conventional green sand molded castings:

1. Less metal required per mold up to 30 per cent.
2. Less finish stock required on castings up to 70 per cent.
3. Less metal in castings up to 15 per cent.
4. Less metal in sprue and gates up to about 45 per cent.
5. Molding labor as such is eliminated. Shell machine operators replace conventional molders.
6. Cleaning castings is simplified; cleaning and other labor reduced up to about 10 per cent.
7. Machining labor using current tools is reduced, due to less metal to be machined off, up to 25 per cent.
8. Reproduction of pattern detail is brought out to a high de-

Shell molds are poured off in a conventional manner. Mold halves are put in flask, backed up with metal shot

gree. Milling marks on patterns are brought out clearly when sufficiently fine sand is used.

9. Skilled molding labor is not required as unskilled labor can be quickly taught to perform necessary operations.

10. Less floor space of molding unit space is required due to relatively smaller size of molds and due in many cases to pouring in a vertical position.

11. Scrap losses caused by chilled edges and gas inclusions due to moisture are eliminated as there is no moisture in the shells.

12. Baked shells or assembled molds can be stored indefinitely with no deterioration due to moisture absorption.

13. Shell molding is essentially cleaner than conventional green sand molding.

14. Because of the absence of moisture in shell molds there is apparently no appreciable skin effect, resulting in better machinability with a given metal. A very light skin cut may be made on Contour castings with no detrimental effects on tool life. Quantitative data on this point are meager and are being further developed.

In addition, the baked shells are very permeable, permitting the rapid escape of gas due to burning resin when molds are poured. While molding sand preparation and handling are eliminated, the mixing and handling of sand resin plus the handling and cleaning of back-up material (shot, grit or sand) offsets this factor. Shells require no reinforcing wires or rods, thus eliminating cost plus cost and problem of removal from interior of castings.

Pattern Assembly—Assembly of metal patterns, plate, ejector pins and ejector plate is called a "thermodie" in IH usage. The name signifies that the metal pattern must be made with the accuracy used in die making and is subjected to heat in use.

Dimensional accuracy of the patterns must be as good as or better than expected in the castings. Likewise, the surface finish of the patterns must be of a fairly high degree of smoothness.

Pattern Tips—The pattern may be constructed of a number of materials. Generally, a metal is preferred whose surface will retain a very smooth finish, whose melting point is fairly high and will not undergo sharp changes in physical dimensions with temperature changes. Aluminum and other soft metals should be avoided if possible except for experimental patterns where such metals may be more economical to cast and easier to modify. It is also unwise to use two dissimilar metals on a single pattern, as stresses and strains caused by uneven expansion and contraction with heat are undesirable. Machined cast iron is quite suitable. Steel is satisfactory. Beryllium-copper is very good but more expensive.

Recent developments in the plastics field indicate that glass fiber reinforced plastics that will stand temperatures of up to 500° F or more may become practical and available for pattern use in the Contour process for a limited number of experimental castings or for short-run production.

Generally speaking, gates and risers are smaller than those needed in sand casting. On particular jobs, experience will dictate the need for risers and flowoffs. However, there have been few occasions in our experience with small castings where such risers were absolutely required. Shrinks were eliminated by gating or changes and flowoffs. It is advisable to arrange the gating so that the molten metal feeds from the bottom of the casting. Splashing and turbulence of metal entering the mold cavity should be avoided.

Job Simplified—If a given casting is symmetrical only one thermodie is necessary to carry on experimental work on it, i.e. the "cope" and "drag" shells, or the right and left shells if the mold is vertical, are identical. In production setups two patterns may be mounted on one plate on a machine so that both cope and drag, or right and left, shells are produced simultaneously during each cycle. Thus a machine with a 26 x 41-inch plate might have the plate divided off to produce two or four shells per cycle.

Pattern designer need not be limited to the familiar cope and drag but may consider three or more sections for a complicated mold. Matchplates are set into the

pattern plate so that an exact fit occurs. Cores with large prints may be used to properly align the shells; on the whole this is preferred (if cores are used) because a slight warping is less harmful if the actual reproducing portion of the shell is correctly located in place. Otherwise locators of button or slot design may be incorporated on pattern plate to properly align shells on assembly into molds.

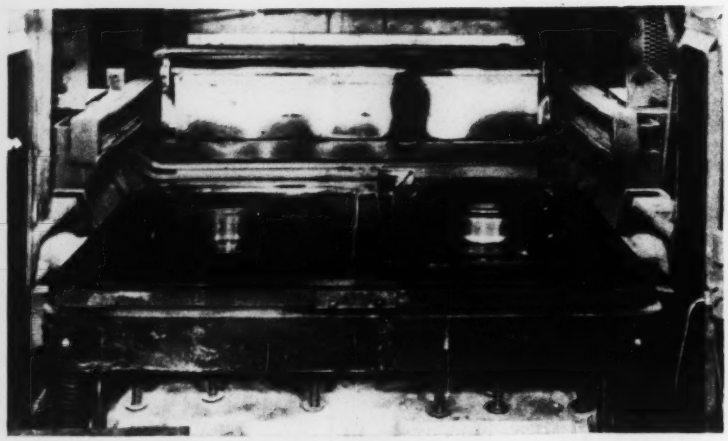
Size Limits—Plate on which actual pattern is mounted is limited in size by the matter in which molds are to be made. If a shell molding machine is available, the size of the frame opening at which pattern plates are mounted determines the size and shape of the pattern plate.

If the various operations involved are to be performed manually, as in preliminary experimental work, weight is an important consideration. The complete pattern must be light enough to be handled easily. If a dump box is used, its dimensions determine the largest size plate which can be used (an adapter plate may be fitted over the dump box for smaller plates).

Plate thickness of approximately ½-inch is advisable for small-sized thermodies and, if it is possible to hollow out projections on the pattern, this should be done. If a uniform thickness of the pattern is thus obtained the operator can be assured of an evenly cured shell. It is advisable that the pattern and pattern plate be constructed of the same material.

For production work it is necessary that a contrivance be used to permit easy removal of the finished shell from the plate. This is best installed in the plate itself.

Keep It Simple—Cores can be made by the Contour process through the use of the dump box or by blowing. Experience with shell cores has been limited to relatively simple, small shapes. Patterns should be designed so that there will be as few cores needed as possible. Keeping in mind that coreboxes must be heated, boxes for complex cores with multiple draws requiring loose pieces should be constructed so that drawing of loose pieces can be done mechanically rather than manually. Because it is desired to make hollow shell cores it is necessary to provide ample openings in the form of core prints to permit removal of excess sand-resin mix. No shell core making machines have been developed to date. It is feasible for conventional cores, either liquid resin or oil bonded, to be used in shell molds.



Brake drum assemblies mounted on adapter plate of shell making machine. Ejector pin heads resemble buttons on plate

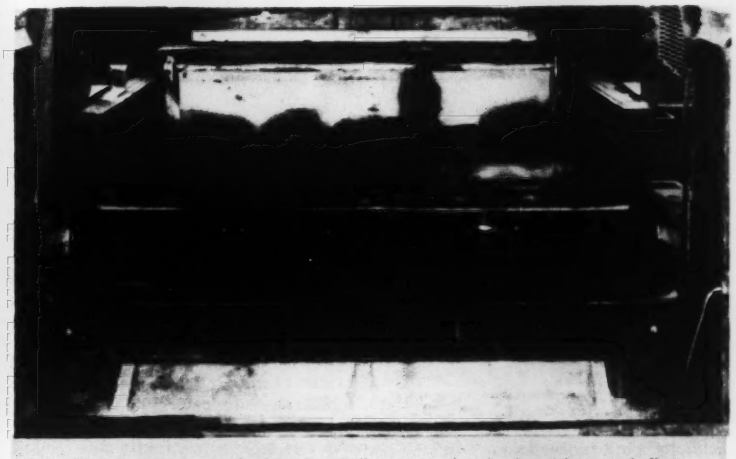
Certain metal core boxes and patterns used in existing production work may be converted for use in shell molding, but care should be taken in the selection that no solder or other low-melting-point material has been used for earlier repair.

Thermodie Preparation—A commercial coating material is being successfully used as a coating on new thermodies. The material applied in a thin coating over the pattern improves the finish of machined surfaces and provides a smooth film on rougher surfaces. The preparation may be applied with brush or cloth. This is done while the pattern is cool and for best results is immediately baked in.

A liquid release agent is generally employed to permit easy removal of the shell from the pattern. A dilute solution of silicone mold release fluid is most suitable. The liquid release can be sprayed on the hot pattern and plate or a dumping of the hot thermodie into a tank containing the release solution will readily fit into the cycle.

Sand and Resin — A variety of sands and resins has been used in experimental molding and evidently each mix has features of its own. It is not possible to predict qualities of a mix when a familiar sand and resin are mixed in an unfamiliar combination. Besides the differences observed between sands and resins, the proportion of each is another variable, and general statements may be made concerning the ratio of one to the other.

As the proportion of resin is increased from, say, 5 per cent, the surface of the mold will become smoother, shinier and harder. These characteristics are not always transmitted to the casting. As the resin content exceeds a certain critical percentage (different for each combination of sand and resin) the danger of penetration and scabs increases. Flowability of the sand-resin mix increases generally with the resin content. Although a high content of resin produces a harder mold, it is also more brittle and the danger of breakage increases. A high resin content also means an increased danger of blow holes. As the proportion of resin is decreased from about 4 or 5 per cent, the molds are weaker, more inclined to crum-



Demonstrating method of shell removal, brake drum shells lifted from pattern are shown resting on ejector pin heads

ble and have a rougher, more porous surface.

Sand and resin are mixed for laboratory work with a conventional muller. A tumbler type mixer may be used. Fifteen minutes to a half-hour has been used as a mulling time.

Manufacturers of certain resins recommend that a wetting agent be used to facilitate mixing. Dust suppressants are now available to minimize resin dust formation.

Making Shells and Cores—When the heated pattern is prepared with coating and release agent the operator is ready to begin the cycle. The face of the shell will be formed by the mix which first touches the pattern and this is perhaps the only situation in the entire cycle where skill is required, and this skill is needed only when manual methods of contact are used.

If a dump box is used as in experimental or job-shop use, the operator clamps the heated pattern to the open top of the box and as quickly as is possible, causes the box to be inverted so that all the mix contained in the box falls upon the pattern. The box is held immobile in this position for as many seconds as desired and then inverted to its original position. A layer of the mixed sand and resin has adhered to the pattern of a thickness determined by the length of time the mix is permitted to remain in contact with the heated pattern (and to a much lesser extent by the heat of the pattern) and the excess mix has fallen off. The pattern covered with the formed shell is unclamped from the box and is ready for the next stage.

In this method it is extremely important that the frame of the box, or that portion against which the pattern rests, be clean and free from any remains from previous cycles. It is recommended that a habit be made of cleaning this frame immediately after the pattern is removed and while the cycle is in another stage. Unless this precaution is observed the danger of a mold falling from the pattern at the second inversion is needlessly great. At times a little release fluid applied to the frame may be advisable.

Coremaking—At this time neither a shell core blowing machine nor a shell core machine has been designed or built. The nine or so foundry machine builders actively engaged in producing or designing equipment for the shell process have confined their efforts to machines designed to produce shells for molds only.

Adaptation of conventional core blowing equipment has been carried out on a limited scale. Conventional core blowers have been employed successfully to make cores which, with suitable adjustments, might also be used to make acceptable shells. In blowing cores the corebox must be constructed with a sand inlet as large as physical considerations permit, and the very essential air outlets must be located so that air may be exhausted and excess sand-resin mix may be ejected.

Nothing Extra—Objective of the operator is to make the thinnest shell that can be used. Maximum economy in materials used and minimum time consumed per mold produced are dependent upon thinness of shell. The time saving is multiplied throughout the cycle because a thinner shell requires less heat and less reheating of the pattern. Danger of breakage increases slightly with a thinner shell.

Acceptable small castings have been made from shells with an average thickness of about 0.100-inch. The results from other shells of this thickness have not been uniformly successful and perhaps 3/16-inch is the most suitable average thickness for squeezer sized castings. Heavier castings require thicker shells.

Pattern Heat — Preliminary study indicates with a pattern temperature of 350 to 450° F a contact time of six seconds will produce a ⅛-inch shell. For a 3/16-inch thick shell with a pattern temperature of 450° F, about 20 second contact time is required. No useful data are available at this time for temperatures from 550 to 1000° F. In the range from 300 to 550° F—the range best suited for production either with or without a shell making machine—the temperature may be ignored insofar as it being a variable in determining the thickness of the shell is concerned. However, other phases of formation of shells are a function of the temperature of the pattern, and to help control these the pattern temperature should be held constant at all times.

Although the actual thickness of a shell is not greatly dependent on the temperature of the pattern, the range of thickness that can be achieved at the different temperatures does vary with the temperature. That is, it seems impos-

sible for a shell formed at 250° F to exceed about 1/16-inch thickness no matter how long the mix is permitted to remain in contact with the pattern; and to extend this a pattern at 700° F can have eventually built up upon it a shell more than a full inch thick.

Final Cure—Following the contact stage, shells need further curing. A shell could stand in air for several hours but such a procedure would be uneconomical in production. Drying racks could be used but the mold is rather weak at this time and handling it would easily cause distortion or tears.

Normal commercial procedure is to place the shell in or under an oven with the time depending on thickness of the pattern and the mix being made. For a shell ¼-inch thick formed from 155 mesh sand with 6 per cent resin, two minutes at 350° F or one minute at 450° F will give a completely finished shell.

Tests were made to study the effect of baking time keeping temperature and other factors constant. Shell strength increased considerably until a baking time of about 1½ minutes was reached. After this time the strength leveled off and was almost constant at a time of 6 minutes. Thereafter strength decreased but at 10 minutes was still stronger than at 1 minute.

Bake Well—Based on these tests, it appears that undercuring is a more serious offense than overcuring. An overbaked shell or core is more easily cleaned from the finished casting than an under or even correctly baked shell. Heat emitted from the casting may be considered an additional baking that burns out the shell or core making cleaning easier.

One successful method of separating the shell from the pattern involves using push-off or ejector pins installed in the pattern plate. Pins are placed strategically about the thermodie and around the pattern of the casting, especially at hollow or concave surfaces.

Cores present a different problem and so corebox construction must include a device for removal. The clamps that keep the corebox in place during the forming process usually can be designed so their release will provide a wedge for opening the box. As the two halves of the corebox open, usually the core remains firmly in one half or the other. Sometimes the core comes out readily but usually small pins are installed in both halves of the box to aid removal and forestall breakage.

Method of placing assembled shell in the flask. This flask will hold four molds for truck brake drums. Addition of metal backup material follows

Assembling and Pouring — After two shells are made and the required number of cores, if any, constructed, they may be stored or assembled into molds and poured immediately.

In assembling the mold the cores are inserted in the usual way and the two shells of the mold properly aligned. Clamps or nuts and bolts are usually employed to keep the shells in position. Pasting of shells is being experimented with. The openings are taped shut or they are covered with templates to keep the mold clean. The prepared assemblies may also be stored in this condition.

Prepared assemblies are next placed in flasks. In production setups a number of assemblies may be set in one flask which has channels in the sides for receiving them. Next, a quantity of metal shot or grit (or gravel or sand) is poured around the mold assemblies while the flasks with molds are vibrated to assure optimum packing of the backing material.

Ready To Go—The tape or metal templates used to cover the mold pouring basins are next removed and the molds poured off in conventional fashion. Hand ladles or monorail suspended, small pouring ladles are used. Because of the better flowability of metal in baked shells, a rather low pouring temperature is permissible and generally preferred.

Since the baked shells are very permeable and since no moisture has to be evaporated, there is little tendency for gray iron to chill, and the possibility of gas inclusions due to the mold is lessened. When the cool castings are shaken out it will be noted that a great deal of resin has burned away, leaving the original sand.

In general, the cleaning of shell molded castings is relatively inexpensive due to the inherently fine finish obtained. No burning-in of sand occurs. After shakeout, castings may be shot blasted with finest commercial shot available such as SAE shot No. 170 which has an average size of about 80 mesh or 0.017-inch diameter.

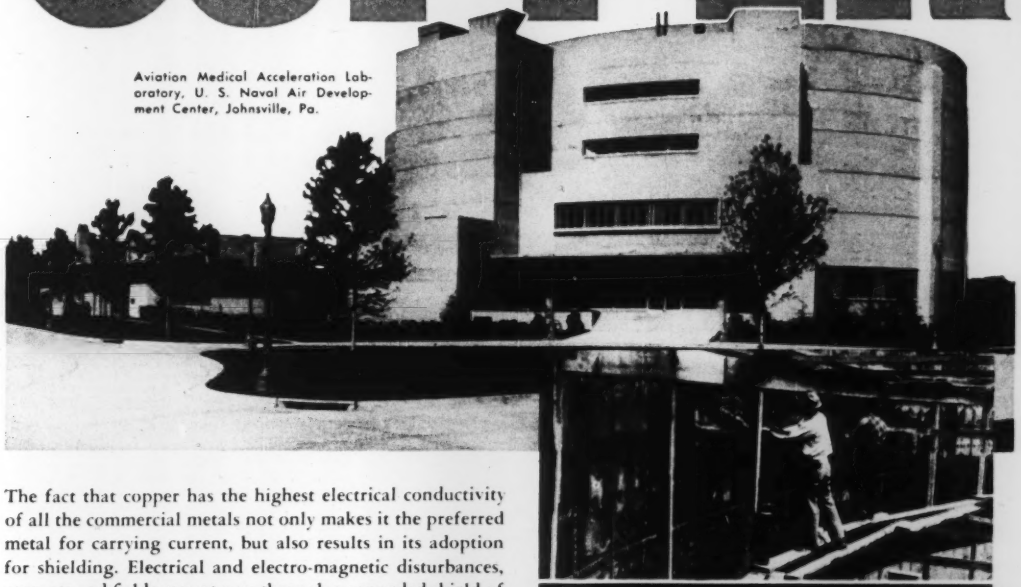
No Backing—Small castings of aluminum and magnesium have been cast successfully in shell molds in which no backup material was used—that is, no metal shot, grit or sand to support the clamped shells. IH experience to date with gray iron and nodular iron indicates that such backup material is necessary to prevent swelling, finning and actual failure of the shells.

Tests made with metallic shot backing material versus sand backing material indicate that no practical difference exists insofar as heat conductivity is concerned. The fine sand-resin shells apparently insulate the metal poured in them sufficiently to nullify the heat conductivity properties of the backup material. Very meager quantitive data are available on this point, and research is being conducted on it. This insulating effect permits the use of somewhat lower metal pouring temperatures.

Pretty Hot — Backup material heats up apparently in proportion to the mass of metal in the mold. A temperature of 650° F has been measured by the foundry laboratory in metallic shot about six-and-one-half minutes after a mold had been poured which contained 26 pounds of iron. High perme-

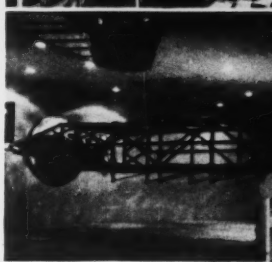
COPPER

can insulate as well as conduct!

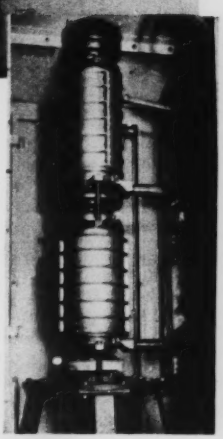


Aviation Medical Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

The fact that copper has the highest electrical conductivity of all the commercial metals not only makes it the preferred metal for carrying current, but also results in its adoption for shielding. Electrical and electro-magnetic disturbances, currents and fields cannot pass through a grounded shield of copper sheet. In this sense, then, copper becomes an insulator. It is widely used for this purpose in laboratories, to assure the accuracy of delicate instruments. A recent spectacular example of such an application is in the Aviation Medical Acceleration Laboratory of the U. S. Naval Air Development Center, Johnsville, Pa. The purpose of the Centrifuge is to test the tolerances of men and animals to the types of acceleration and deceleration produced in military aircraft and to study the physiological conditions which set limits to such tolerances. Recording instruments attached to the subjects are extremely sensitive, but thorough shielding by sheet copper makes it possible to record brain waves without amplification . . . Revere will gladly collaborate with you on scientific and industrial applications of copper and its alloys, and aluminum alloys. See the nearest Revere Sales Office.



Revere Sheet Copper shielding being installed on wall of the Centrifuge chamber by The Howard P. Foley Co., Electrical Contractor, 1630 Pine St., Philadelphia 3, Pa.



A view of the human centrifuge itself. This can produce positive, negative or transverse "G", through accelerations up to 40 times the force of gravity. A great many records are made of each test, including X-ray motion pictures. The subject is observed continually by television.

Upper slip-ring stack—physiological, signal and power. Here copper serves as a conductor.

Official Photographs from U. S. Navy

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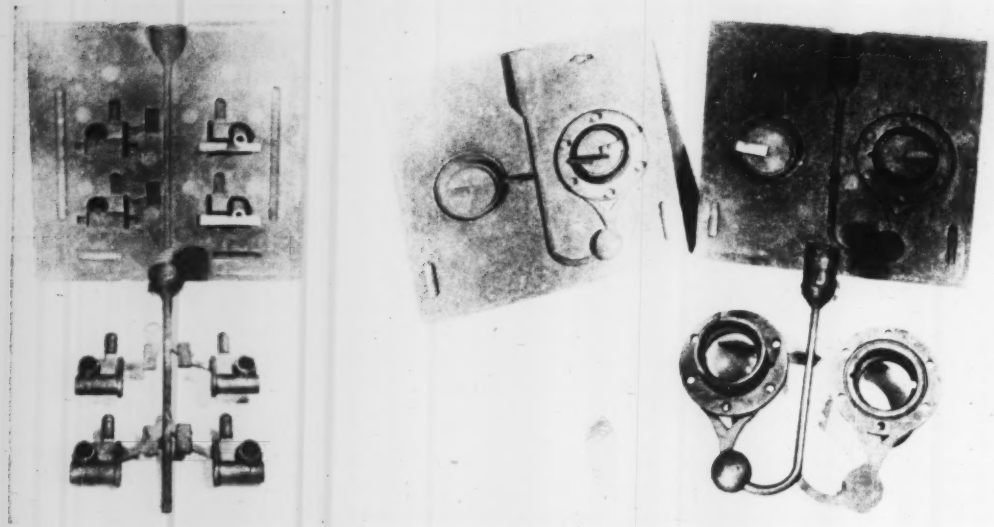


Examples of components produced by shell molding. Both shells measure 15 x 16 inches. At left is rocker arm shaft bracket, at right pinion bearing cage

ability of any backup material used is important.

Heating equipment used by various concerns in shell production includes gas or electrically heated ovens and patterns. Automatically controlled electrical heating of patterns will probably become standard. Resistance and infra-red heating have been experimented with in the electrical field.

Resins Aren't Cheap — Since phenol formaldehyde resins are relatively expensive, economic considerations dictate the use of minimum practical quantities. For this reason, shell thickness should be held to a minimum consistent with good foundry practice. Because of the resin cost, extenders to replace part of the resin are being sought. Any decrease in resin cost will, of course, decrease shell molding costs. In addition, excessive shell thickness seems to be somewhat detrimental to casting finish.

Tongue and groove dams near the outer edges of shells and between down sprue and casting cavity help to prevent fins and to locate shells and are desirable on production equipment.

Shell Making Machines—An extensive investigation of the various shell making machines that are currently available or that will be available in the near future has been made. Some of these machines are being made for sale at the present time; others are still in the design stage and will be built some time in the future.

Shellmold & Machine Co. builds a single station type designed for a pattern plate size of 26 x 41 inches. Stripping mechanism is designed for a length or height of 8 inches. The machine is equipped with gas-fired oven. Floor space required for the present model is 9 x 16 feet. This machine was designed to produce 40 shells per hour.

Two important features are to be added to this machine. These are an automatic sand-resin feeder to fill the sand hopper and a shell unloading device. This device will be arranged to remove the shell from above the hot pattern to a location adjacent to the machine.

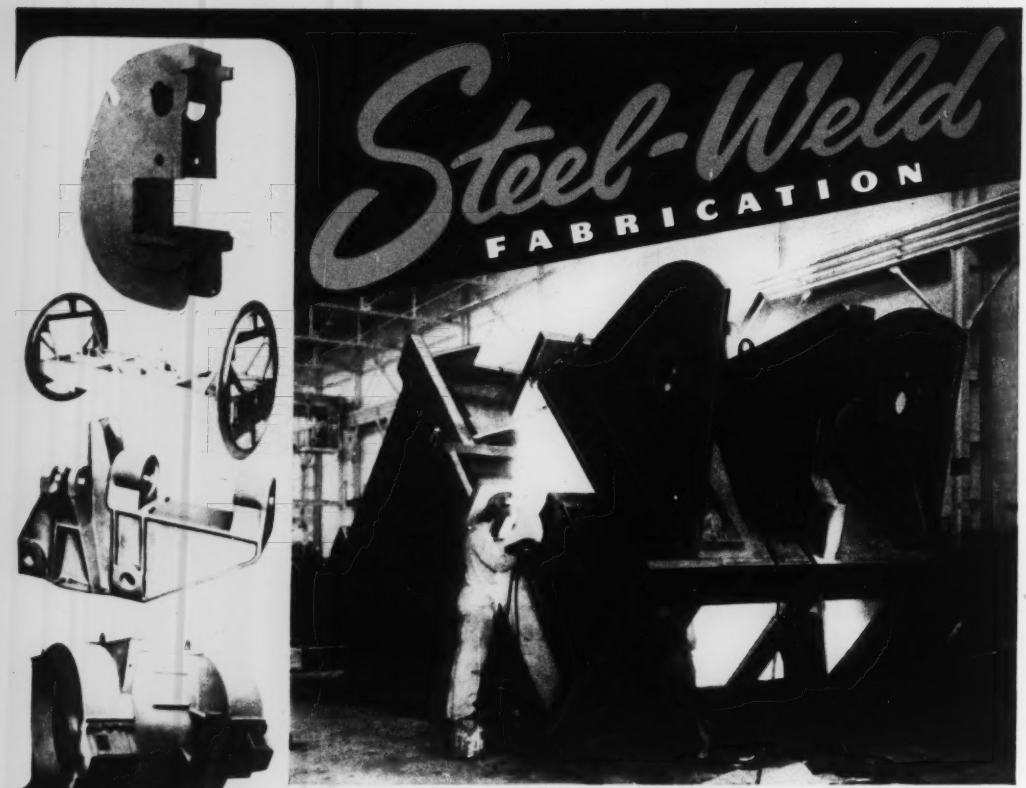
For Volume Work—Sutter Products Co. has built seven turntable type shell making machines (pattern size, 26 x 41 inches) which are being used by a large motor company. Each of the seven turntables has six individual shell production machines mounted on it. The turntables, with their auxiliary equipment, ovens, etc., are approximately 25 feet in diameter. From the experience gained in the designing and building of these 42 machines, Sutter Co. has designed and built a self-contained single station shell producing machine. This machine will handle a pattern of 20 x 30 inches with a $3\frac{1}{2}$-inch strip. The company also proposes to build a 20 x 36-inch machine with a stripping mechanism to suit the depth of pattern and a single station machine for a pattern size of 26 x 41-inches with whatever draw is required.

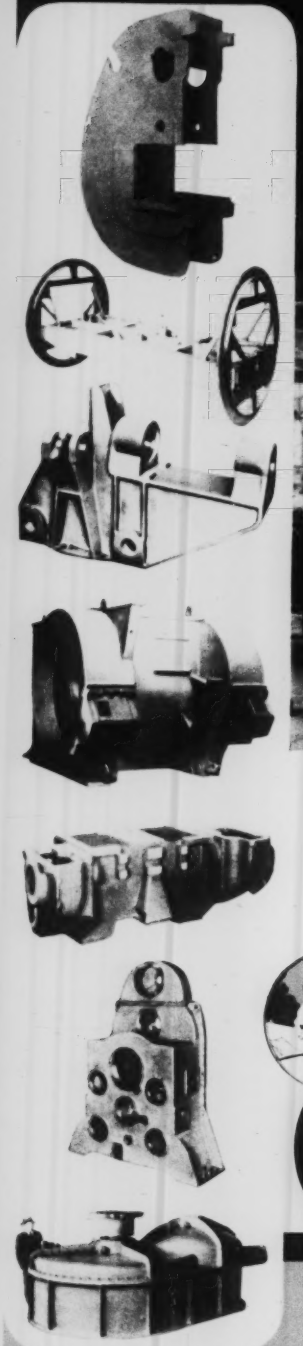
Ovens of all sizes can be gas fired or electrically heated. Arrangements will be made to permit auxiliary electric heating of patterns. The basic design for electric heating of patterns to be used on these machines has been established by Sutter. Floor space required is $8\frac{1}{2}$ x $8\frac{1}{2}$ feet.

Moves Right Along—Mechanical Handling Systems Inc. designed and is building two rotary type shell producing machines. The small machine is a six-station unit which measures approximately 21 feet in diameter. The larger machine will have 12 stations and will be approximately 26 feet in diameter. Pattern sizes on both machines are 22 x 28 inches with an $8\frac{1}{2}$-inch draw or strip. The ovens on both machines will be gas fired. Because the machines will be entirely powered by electric drives, no air will be required. An auto-

United Engineering and Foundry Company

PITTSBURGH, PENNSYLVANIA





Above you see the Crown and Bed of an 800 Ton Press produced by Steel-Weld Fabrication in the Mahon plant for one of the largest manufacturers of heavy presses. These massive pieces, and the parts and assemblies illustrated at the left, are typical of thousands of units Steel-Weld Fabricated and machined by the Mahon Company for manufacturers throughout the country. If there are parts or assemblies in your product that could be redesigned and produced in welded steel to better advantage from a strength-weight standpoint, or, if you are faced with a limited production on an item involving heavy pieces in which pattern costs are a consideration, you can turn to Mahon with confidence. You will find in the Mahon organization a unique source with complete, modern fabricating, machining and handling equipment to meet your requirements . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures you a smoother, finer appearing job, embodying every advantage of Steel-Weld Fabrication. See Mahon's Insert in Sweet's Product Design File, or have a Mahon Sales Engineer call on you at your convenience.

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matic sand-resin blending and feeding device to fill the sand hoppers and a shell removal device will be available optionally. The company also expects to design and build at a later date an auxiliary machine to assemble the shells automatically.

The six-station machine is expected to produce four shells per minute with a curing time of 30 to 45 seconds and a dwell time of 13 seconds. The 12-station machine is expected to produce eight shells per minute.

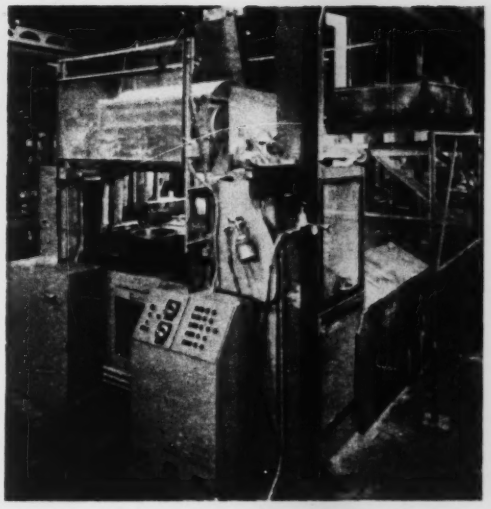
Shallow Work—Osborn Mfg. Co. designed and built machines with a pattern size of 20 x 30 inches and a draw or stripping arrangement of ⅞-inch. They are intended for rather shallow patterns. The oven is electrically heated and is moved over the pattern and away again by manual operation. The other operations are accomplished by air power through the use of air cylinders.

Winter Engineering Corp. designed several machines—a single-station unit, a two-station rotary index machine, a four-station rotary index and four-station continuous rotary machine, and an eight-station continuous rotary machine.

Maximum pattern size for all machines is 30 x 40 inches with draw or length of stripping as required. Ovens are to be electrically heated. Patterns are also to be heated electrically and thermostatically controlled. Anticipated production of the various machines, all using a 30-second curing time, ranges from one shell per minute for the single-station machine to eight shells per minute for the eight-head continuous rotary machine.

Econocast Inc. built a rotary type machine for making shells. It is equipped with electric ovens, and the patterns also are heated electrically. Tabor Mfg. Co., Philadelphia, will design and build production machines based on Econocast's original model. Machines will be available early in 1953.

Robinson Co. built the first rotary type shell production machines for production of shells for automotive castings. The machines are arranged with nine pattern holding arms and are approximately 10 feet in diameter.



Single station shell molding machine showing control panel, pattern, safety gate. More complex machines are available

Keeps Going — Crown Casting Associates designed and built an experimental model shell making machine. In this machine the patterns are mounted on a pair of endless chains. The chains carry the patterns through the various operations of coating, inverting, curing, stripping and applying of release agent to the patterns.

Shell-O-Matic Corp., a division of Newark Pattern Works, exhibited a machine to produce shell molds at the AFS convention. The pattern size on the machine shown was 12 x 18 inches with a ¾-inch draw. It was indicated that the draw could be increased. Curing oven is electrically heated. The machine is operated by air at 140 pounds pressure, controlled by hand valves. An automatic timer operates a bell indicating when the manual air valves should be operated. Machines equipped for larger pattern sizes will be designed and built in the future.

Several other shell making machines have been built. These machines have generally been designed and constructed by the companies planning to use them in the production of their own castings and for this reason are not available to the public. It is probable that many other molding machine manufacturers will design and build various types of shell making machines for various classes of castings.

New Product Hazards Told

THOROUGH investigation of all new products should be made by manufacturers to determine whether or not there are hidden hazards to property and to the public. This was urged by John V. Grimaldi, director of industrial division, Association of Casualty and Surety Companies, New York.

Mr. Grimaldi, who spoke at the annual meeting of American Society of Mechanical Engineers, said that too often dangerous new products reach the market causing destruction to property, injuring the public or harming its health. Just as frequently new products have damaged their manufacturing plants and surrounding buildings or have injuriously affected employees.

"Seller Beware"—"Such unfortunate experiences cost money and sometimes the expense is so great that the manufacturer is forced out of business."

Pointing out that the policy of "buyer beware" has changed to one of "seller beware," Mr. Grimaldi said that the question is not whether the manufacturer is right or wrong concerning the hazards of his product. He must know and be able to prove that his product is free from dangerous hidden hazards in the event that any liability claims are made against his company.

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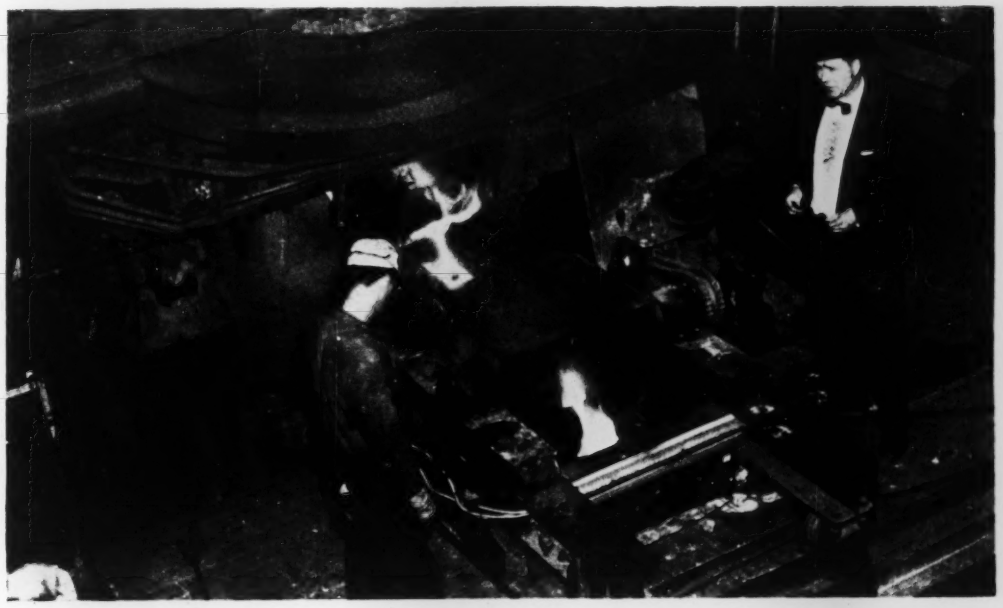


Casting operation showing stream of steel pouring from furnace in inlet end of tundish and other stream pouring from outlet end into mold. Tundish holding mechanism can be moved for the purpose of guiding the stream of molten metal

Continuous Casting Makes Steady Progress

Recognition and control of six fundamental factors is the path to success for the much discussed method. Commercial stainless plant may be started by end of 1953

JOINT development work being conducted by Republic Steel Corp., Cleveland, and Babcock & Wilcox Co., Tubular Products Division, Beaver Falls, Pa., is aimed at simplifying or eliminating some of the present steps in making steel products and to reduce the capital and operating costs required. Success of continuous casting is contingent upon recognizing and controlling: Steel composition and pouring temperature, slag separation, proper mold design, automatic pouring, proper casting cross section, and auxiliary cooling and guiding support below the mold.

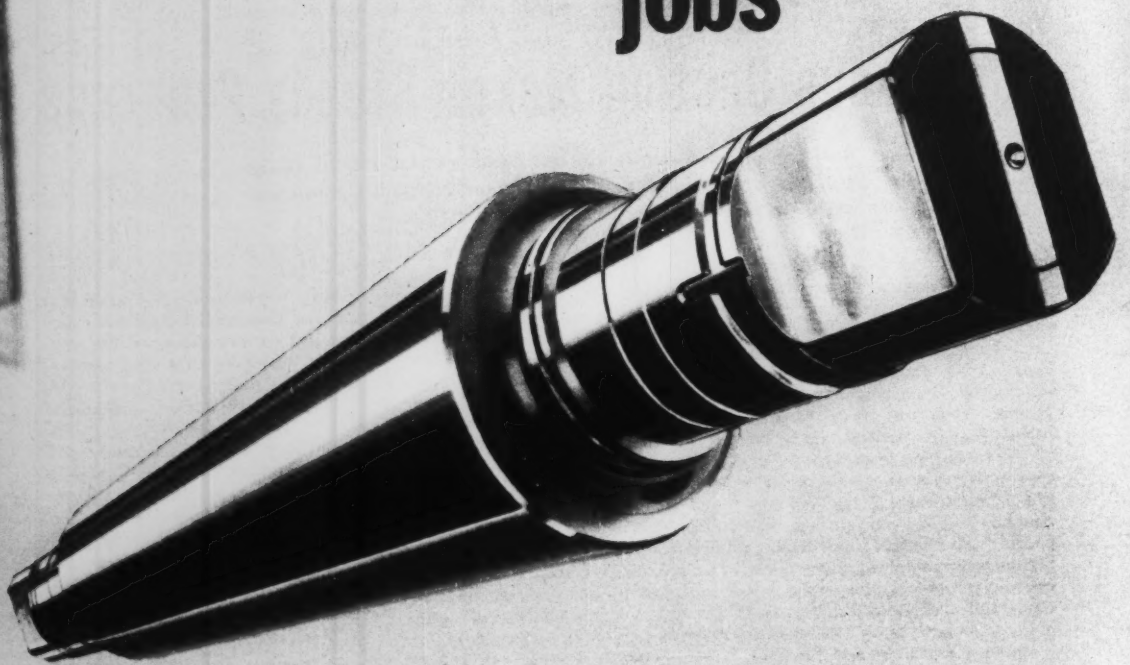
Holding Analysis and Heat—A commercial tower must be able to send a ladle to receive steel at the melt shop and on placing it in position for casting must be able to hold the steel for at least two hours at the correct pouring temperature without changing its composition and cleanliness. An experimental unit of 5 tons capacity has been tested and meets these conditions.

This holding ladle will require no change of design when built in any size and in fact its operation becomes easier as the size increases because of the decrease in ratios of slag, brickwork weight, and heat loss surface to metal volume. This device is satisfactory for commercial use. However, this innovation is not as yet incorporated in the pilot plant.

Slag Separation—The basic design of the tundish has not been changed for sometime and the unit is still effective as a slag catcher and metal guiding device.

Proper Mold Design — Squares 7 x 7 inches and 9 x 4¼-inch ovals have been cast successfully. These sizes are now being followed by 6 x 6-inch squares specifically designed for stainless steels for the extrusion process. Results obtained from the material recently extruded and also from that processed by the Republic Steel Corp. fulfill past expectations. Although this size range gives an entry to real commercial tonnage, large slabs would greatly increase the market. Getting this additional

for your rolling mill jobs



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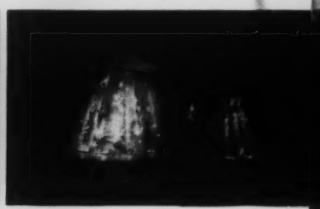

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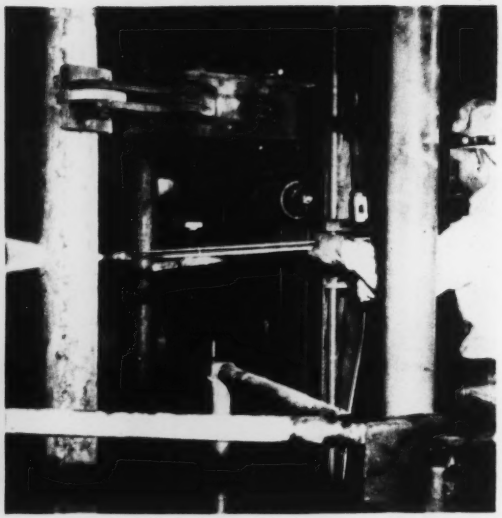
Because Mack-Hemp engineers keep pace with modern steel mill practice, it's wise to keep your eye on what's new at Mack-Hemp.

Using a riveting tower already standing determined height of building for continuous casting. Ideal height: 45 ft



View of the present manual system of cutting the billets into desired lengths with oxy-acetylene cutting torch

market will entail further development of a somewhat differently constructed mold.

This is solely a structural problem as the heat absorption of the present mold is entirely satisfactory. This design is embodied in a successfull construction method but it will take three to four months to make sure that these molds can be built economically.

Automatic Pouring Control — This element of continuous casting is now developed for commercial use. In fact, there can be no commercial casting without it. Without this control it is impossible to operate at the high speeds necessary to cast low-carbon steel economically.

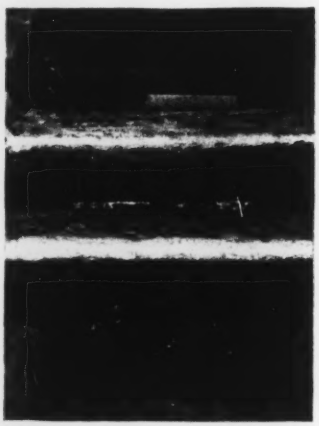
Proper Cross Section—Although an oval is the best cross section for the highest casting and rolling rates, sections for squares and rectangles were developed that are more suitable for application to existing handling and heating equipment. These shapes can now be made at an economic rate.

Support Below Mold—It would be difficult and inconvenient to make a mold long enough to solidify the steel completely. With the use of a mold of practical length, much of the interior of the casting is soft or molten when it leaves the mold. If the section is not supported, it will swell and crack.

At economic casting speeds, swelling and cracking can occur for a considerable distance below the mold. Therefore, a means somewhat similar to the mold itself must be used to keep the casting from swelling.

Looking Ahead—In order to accurately determine the economics involved in the application of continuous casting, an experimental production run comprising the casting of approximately 700 tons of A-83 specification carbon steel resulted in obtaining a wealth of information concerning the product and performance of continuous casting. Outstanding result of this run was the extraordinarily high percentage of usable tube rounds which can be obtained by continuous casting from a given weight of liquid metal. In an electric furnace shop of conventional size the yield would be about 90 per cent for continuous casting as compared to ingot practice yield of approximately 70 per cent.

When casting such a high cost material as stainless steels, the difference in yield between these two processes becomes larger. For this reason, it is likely that the first production plant will be built to cast stainless and probably will be started by the end of 1953 with carbon steel plants to follow.



Closeup view showing a typical surface obtained by continuous casting process

Booklet Covers Socket Screws

Advantages of button head socket screws, uses, dimensions and prices are included in the bulletin published by Standard Pressed Steel Co., Jenkintown, Pa., for its line of Unbrako screws. Free copies are available from the company offices.

Manufacturing Shift

(*Concluded from Page 65*)

at the aft end and the cradle clamp at the forward end. Floating hydraulic clamps grip the support plate flange at the position determined by the locator plug, which then retracts.

The first head faces and bores the rabbet, and faces the inner surface of the forward flange.

Fixture traverses to the second station.

Skims on Last Cut—Second head enters the unit to bore, counterbore, face and chamfer the damper bearing stiffener. Simultaneously the third head bores, counterbores and faces the bearing housing ring in the aft end. After balance of this cycle is complete, the third head re-enters for a skim cut from the bearing retainer, to meet the exacting finish and dimensional requirements.

Fixture returns to the first station for unloading.

In actual production, the new machine has far exceeded expectations. Actual floor-to-floor cycle time is 30 minutes, which is 13 per cent of the previous requirement.

Special Machine

(*Concluded from Page 67*)

was developed with a completely automatic cycle. Operator loads the roll into the driving adapter and brings up the hydraulically operated tailstock. He pushes the start button and the cycle begins. The spindle begins to drive the roll. Either two or four finishing heads then move up to the work and begin oscillating for the roughing operation. Three times during the cycle the spindle speed is automatically increased and the same or other stones move in for finishing.

At the end of the timed cycle the stones retract, the oscillation stops and the spindle brake is applied. The operator then wraps the roll to protect the surface during storage and removes it from the machine.

Work Range—A number of adjustments adapt the machine to a wide variety of rolls. Both the tailstock and the slides that carry the finishing heads may be adjusted longitudinally. Spindle speed, oscillation and traverse rate are also adjustable and may be varied within the machine cycle. Stonenoiders are the quick-change type.

Additional tests are now being carried on at the mill on a production basis. Latest figures available show that the life of the Superfinished rolls averages about three times the life of ground rolls. The standard 15 minute machine cycle is being reduced as much as 40 per cent, in certain cases. Tests on various stones are under way to bring the resultant surface roughness down to even less than 1 micro-inch rms.

Although the advantage of Superfinish for rolling stainless steel sheet is proved, the application cannot be considered universally successful on all mill rolls. This is particularly true in the case of precious metal foil. Yet, with the work now being performed it seems reasonable to expect that the next few years will show additional mill roll applications where the method can show considerable savings.

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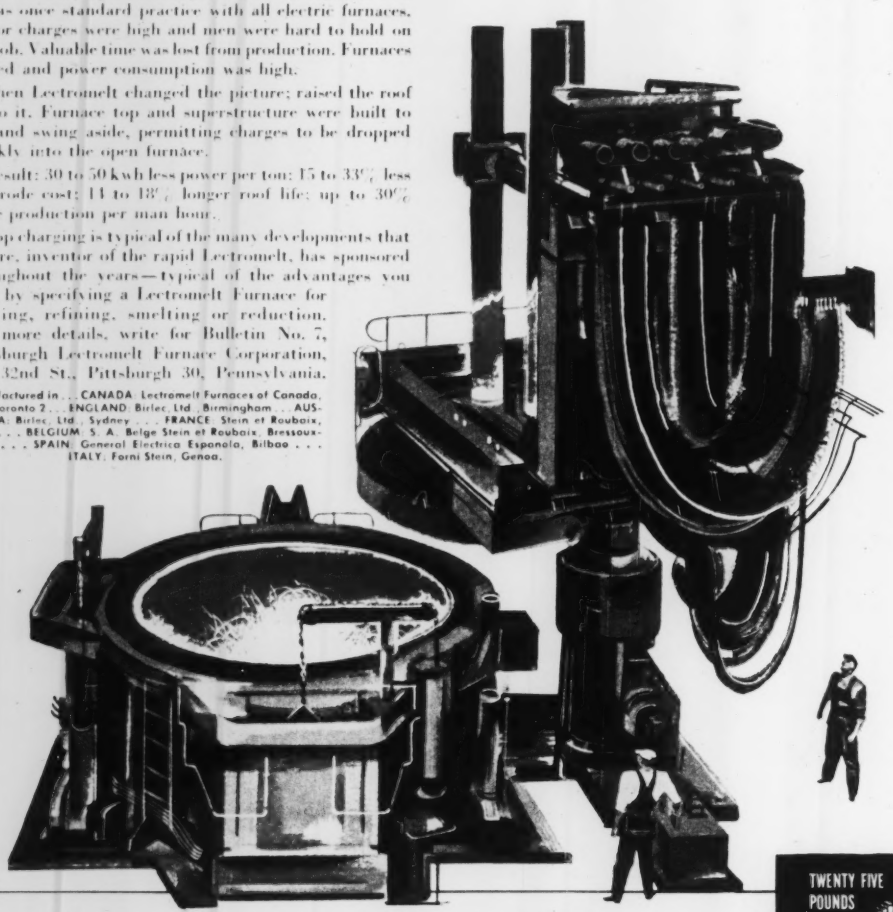

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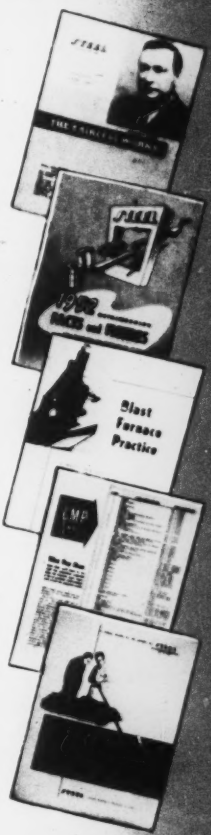

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- ☐ BLAST FURNACE PRACTICE
- ☐ CMP SYMBOLS . . . What They Mean
- ☐ GUIDE FOR SELECTING TOOL STEELS & CARBIDES

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tool steel is the apple of our eye!

We're especially proud of our tool steels . . . because users rate them tops in the field. In fact, users think so highly of them, they've made Crucible the country's number one producer of these fine steels.

We like this enviable position. Thus, we make sure our research and development keeps step with industry's need for new, improved tool steels. You, too, can profit from our long experience by taking advantage of our metallurgical service. You are assured of prompt delivery of your requirements from our fully-stocked warehouses, strategically-located throughout the country.

SEND TODAY for the unique Crucible Tool Steel Selector—a twist of the dial gives the tool steel for your application.

Rex® High Speed Steels
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Halcomb 218
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Sanderson Carbon Tool Steels
Ketos®
AirKool Die Steel
Airdi® 150
Nu-Die V Die Casting Steel
CSM 2 Mold Steel
La Belle® Silicon #2
Atha Pneu

SPECIFY YOUR TOOL STEELS BY THESE BRAND NAMES

Crucible Steel Company of America
Dept. S, Chrysler Building, New York 17, N. Y.

Name_____

Company_____ Title_____

Address_____ City_____ State_____

9" diameter, 3-colors

CRUCIBLE first name in special purpose steels

52 years of Fine steelmaking

TOOL STEELS

CRUCIBLE STEEL COMPANY OF AMERICA · TOOL STEEL SALES · SYRACUSE, N. Y.

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Here's your "*special secretary*" to speed your steel supply business

OUR receptionist is usually your first contact when you phone or visit U.S. Steel Supply. You will find her friendly and courteous, and anxious to attend to your steel supply business as quickly and efficiently as possible. She is thoroughly acquainted with our system of team operation, and if you want the assistance of a specialist to handle your specific inquiry, she will direct you to the right one. She knows where to contact your U.S. Steel Supply salesman in an emergency, and will follow up your messages to assure prompt call-backs.

When you want steel, tools, equipment, machinery or information *fast*, call U.S. Steel Supply. You'll always get prompt action from people who take a personal interest in giving you the best steel supply service.

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TULSA · YOUNGSTOWN

UNITED STATES STEEL

NEW PRODUCTS and equipment

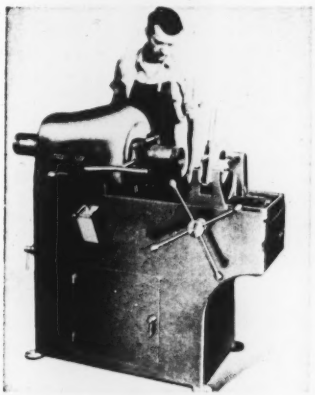
Reply cards on page 95 will bring you more information on any new products and equipment in this issue

Automatic Chuck

. . . finishes pipe in 44 seconds

Power-operated automatic chuck threads, reams and cuts 4-inch pipe in 44 seconds. The Thred-O-Matic 44 is equipped with die heads for pipe from 2½ to 4 inches; adaptors handle ½ to 2-inch pipe. Model has eight hobbed jaws that grip pipe tighter as the torque is applied.

Flat blade reamer attached to the die head reams inside of pipe



cleanly during threading. Reamer can be removed for running threads. One screw adjusts all four dies in each head simultaneously for changing thread depth. Quijada Tool Division, Gaines-Collins Corp., Dept. ST, 5474 Alhambra Ave., Los Angeles 32, Calif.

USE REPLY CARD—CIRCLE No. 1

Short-Turning Fork Truck

. . . stacks 48-inch-long loads

Compact fork truck chassis has 3000-pound load rating at 24-inch load center. Designated model A-3444, the truck has double-reduction unit drive assembly, compensating controlled caster-type steering axle and balanced cross load suspension.

Short turning radius permits

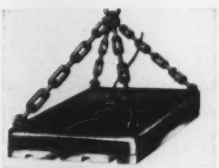
right angle stacking in 10-foot aisles with 48-inch long loads. Also incorporated are automotive wheel-type steering control and foot control of acceleration. Mercury Mfg. Co., Dept. ST., 4044 S. Halsted St., Chicago 9, Ill.

USE REPLY CARD—CIRCLE No. 2

Lifting Magnet

. . . reaches difficult corners

This lifting magnet gets into corners difficult to reach with a round lifting device. Result is maximum



payload per lift. Another reported advantage offered by the high-ratio unit is operation with saving in electrical energy. O. S. Walker Co. Inc., Dept. ST, 1000 Rockdale St., Wooster 6, Mass.

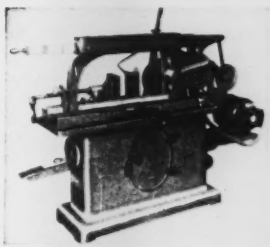
USE REPLY CARD—CIRCLE No. 3

Power Hack Saw

. . . blade pressure: 200 pounds

This power hack saw, the Keller model 5 Hy-Duty, has capacity for a 9¼-inch round or an 8 x 9-inch flat form. Cabinet base, automatic lift on reverse stroke are included in design. Foot lever helps hold frame in position while loading or unloading saw, or setting for desired material length. Variable power pressure regulator provides blade pressure from 0 to 200 pounds. This increases efficiency for cutting materials from lightest wall tubing to heavy shafting.

Saw has swivel base vise with



quick adjustable sliding jaws and single screw. Standard equipment includes automatic stop switch and automatic belt take-up. Sales Service Machine Tool Co., Dept. ST, 2363 University Ave., St. Paul, Minn.

USE REPLY CARD—CIRCLE No. 4

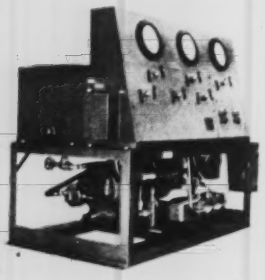
High-Pressure Gas Booster

. . . ups pressure to 12,000 psi

Hydraulically-driven compressor booster takes bottled gas from 300 to 2000 psi and boosts it to any given pressure up to 12,000 psi. With 10 hp motor, it delivers about 1.5 cfm up to 1250 psi over input bottle pressure and about 0.9 cfm

from 1250 psi up to maximum receiver pressure.

This is accomplished by a high-



low automatic unloading pump system that increases efficiency by about one-third over a single-pump system. Haskel Engineering & Supply Co., Dept. ST, 721 W. Broadway, Glendale 4, Calif.

USE REPLY CARD—CIRCLE No. 5

Miniature Stop Nuts

. . . with nylon inserts

Type 1660 miniature hexagonal stop nuts, as small as 0.109-inch across flats, have nylon locking inserts and will be available in brass and aluminum. The integral locking collar type of self-locking nut makes possible precise adjustments whether nut is tightened against a seating surface or located at any predetermined point on a threaded member. Elastic Stop Nut Corp. of America, Dept. ST, 2330 Vauxhall Rd., Union, N. J.

USE REPLY CARD—CIRCLE No. 6

Face Milling Cutter

. . . has solid carbide blades

Carbide-inserted face milling cutter, type IBH, has three parts—blade, wedge and screw—to be assembled with the steel body. Cutter can also be used as a half side mill. Body is recessed below each wedge to facilitate wedge removal. Threads are in the wedges, not the body.

Solid carbide blades are extra heavy and arranged radially for maximum blade life. All blades and parts are interchangeable. Blades can be reversed and used in either right or left-hand bodies. With threaded wedge design, all damage is absorbed in blades and wedges in case of accident and body can be refitted quickly. Cut-

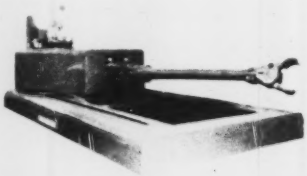
ter is available in six sizes from 4 to 14 inches. Super Tool Co., Dept. ST, 21650 Hoover Rd., Detroit 13, Mich.

USE REPLY CARD—CIRCLE No. 7

Furnace Charging Machine

. . . operates by remote control

Charging machine, engineered for operation by remote control, permits operator to control numerous motions directly within reach. There are no obstructions to operator visibility. Amount of hydraulic piping is reduced con-



siderably and motion approaches servo-control.

Operator controls two electric and four hydraulic motions in addition to opening and closing furnace doors and operating a descaler. Columbiana Engineering Co., Dept. ST, Columbiana, O.

USE REPLY CARD—CIRCLE No. 8

Track-Type Pullout

. . . no bent or damaged cable

This machine uses traction-tread principle for wire mill operation. Unit does not bend or damage cable. It eliminates friction because pressure on pulling treads is taken up by rolling action. Horizontal pull is imparted to the cable as it passes between two traction-treads consisting of a series of individual blocks molded of synthetic tire-stock material.

Upper and lower treads are power-driven dual-roller chain and sprocket assemblies from a common drive shaft. Treads are adjustable vertically by a hand crank to accommodate the full range of cable diameters. This adjustment also determines clamping effect on the cable. James L. Entwistle Co., Dept. ST, Providence, R. I.

USE REPLY CARD—CIRCLE No. 9

Acid Carboy Dumper

. . . makes acid handling safer

Carboy dumper, made for use with hoists or overhead conveyors, permits quick, safe handling of acids. Model GS 77 allows carboy to be tilted to any angle and locked in position to assure steady pouring. Chains at bottom and top keep wood from splitting or pulling out during handling. General Scientific Equipment Co., Dept. ST, 27th & Huntingdon Sts., Philadelphia 32, Pa.

USE REPLY CARD—CIRCLE No. 10

Magnesium Barrel Skid

. . . eases drum, barrel handling

This all-magnesium barrel skid for drum and barrel handling combines extreme light weight with ease of handling. Advantages:

faster handling, greater safety for men and equipment.

Skids are available in standard sizes from 5 to 18 feet long. Magline Inc., Dept. ST, Mercer St., Pinconning, Mich.

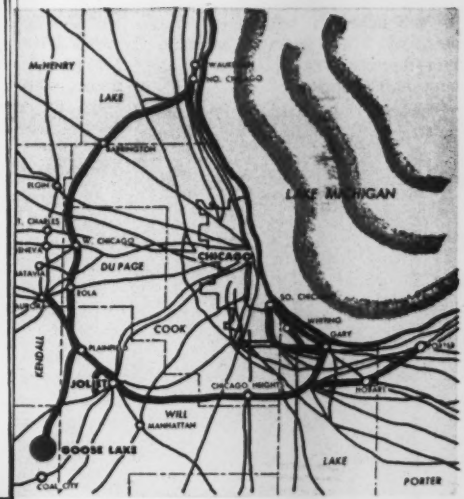
USE REPLY CARD—CIRCLE No. 11

Belt Sander

. . . bearing life: 10,000 hours

This belt sander is designed for all fine burring, grinding and pol-

ILLINOIS CLAY PRODUCTS HAS ALL 3



1 Central Location

The Illinois Clay Products Company, Goose Lake Plant, is located near Joliet, Illinois—only 55 miles from Chicago. Above is a map showing the excellent shipping facilities provided by the Elgin, Joliet & Eastern Railway—the Outer Belt Line.

2 Ample Supply and Modern Plant

At Goose Lake, extensive deposits assure an ample source of fire clay for many years ahead. This large modern plant employs all the latest methods in the manufacture of refractories and insulation and many advanced and special techniques have enabled us to supply better products than are obtainable elsewhere.

Chem-Brix
Pat. Applied for
CHEMICALLY BONDED REFRACTORIES

GOOSE LAKE

3 Quality Products

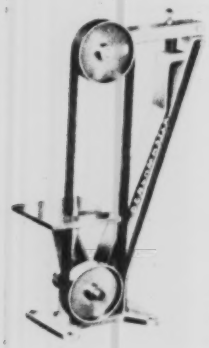
For over 40 years, Illinois Clay Products Company has maintained high standards in quality and uniformity. Research and development have led to constant improvements and new products such as Carbon and Hi-Silica Chem-Brix.

THERM-O-FLAKE
HIGH TEMPERATURE VERMICULITE INSULATION

SINCE 1911 — Illinois Clay Products Company — JOLIET, ILLINOIS

ishing operations on metals. Four-inch diameter belt wheels are mounted on heavy-duty, double-row ball bearings, both liquid and dustproof. At average working loads, bearing life is estimated at about 10,000 hours.

Trackage adjustment insures positive wheel alignment. Top



wheel supporting arm is rocker-mounted and pivoted for belt take-up. Spring load insures correct belt tension when using backup plate. No auxiliary belt trackage devices are required. Sander operates at any speed up to 8000 sfm. Benchmaster Mfg. Co., Dept. ST, Gardena, Calif.

USE REPLY CARD—CIRCLE No. 12

Pressure Sensitive Tape

. . . thin and flexible

Thinflex masking tape No. 6207 is unusually thin and flexible without sacrifice of necessary strength. Backing, made of cellulose fiber saturated with a special rubber compound, is actually more rubber than fiber. Backing is fully creped and in perfect balance with adhesive strength so that tape holds positively yet strips off fast in one piece without breaking. Mystik Adhesive Products, Dept. ST, 2635 N. Kildare Ave., Chicago 39, Ill.

USE REPLY CARD—CIRCLE No. 13

Rectifier Tubes

. . . for high-voltage use

Types 6102 and 6103 high vacuum diodes are for industrial use in high-voltage rectifier applications. Type 6102 is for use in applications involving peak inverse voltages up to 40 kv and for oil immersed operation. Type 6103 is designed for applications involving peak inverse voltages up to 20 kv. It is provided with an integral radiation for forced air cooling. Westinghouse Electronic Tube Division, Dept. ST, Box 284, Elmira, N. Y.

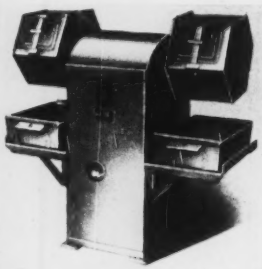
USE REPLY CARD—CIRCLE No. 14

Twin Barrel Finisher

. . . barrel size: 10¾ x 17 inches

Standard size twin barrel finisher handles steel burnishing balls in both barrels. Machine operates through ball bearing variable speed drive and ¾ hp, 220 v 3-phase motor.

Standard barrels are 10¾ x 17 inches, but larger sizes are available if necessary. Barrels are available either unlined or vinyl plastic lined with safety type cover. Standard equipment includes two tote boxes for emptying bar-



rels and perforated covers to permit draining liquid from barrels. Rampe Mfg. Co., Dept. ST, 3320 St. Clair Ave., Cleveland 14, O.

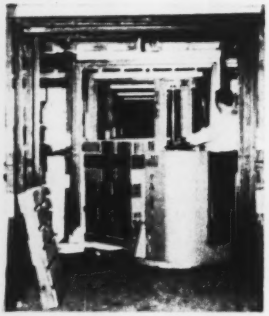
USE REPLY CARD—CIRCLE No. 15

Warehouse Electric Truck

. . . tiers in 5 to 6-foot aisles

Rider-type electric fork lift straddle truck is made for right angle tiering in 5 to 6-foot aisles. It also operates in elevators and over lightweight flooring. Truck features three speeds forward, three reverse, with time-delay controls.

Model is available in 2000 and 3000-pound capacities. It can lift loads as high as 133 inches, to maximum use of air-rights. Drive unit consists of a horizontally mounted motor, with direct gear drive to splined axle. Power is turned off and brakes applied when



operator leaves the truck. Yale & Towne Mfg. Co., Dept. ST, Philadelphia 15, Pa.

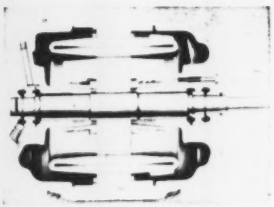
USE REPLY CARD—CIRCLE No. 16

Totally-Enclosed Motor

. . . has self-cooling design

Totally-enclosed motor is designed for service where dampness, dust, fire hazards and corrosive fumes are prevalent. Type SS is self-cooling, eliminating need for exterior fan and heat-dissipating fins. Smooth exterior makes cleaning easier. Slinger protects output shaft bearing against entrance of contaminants.

Approved drain plug will release



water from condensation from interior, but retain explosion-proof characteristics. Motors are available in 1/3 to 2 hp ratings; larger ratings are planned. U. S. Electrical Motors Inc., Dept. ST, 2058 Terminal Annex, Los Angeles 54, Calif.

USE REPLY CARD—CIRCLE No. 17

Metal-Enclosed Switch

. . . safe, positive interruption

This metal-enclosed switch for 600-v ac or dc service combines functions of disconnect and load

SPRING WIRE

For uniform quality, we're sure this spring wire is the best we've ever made

ROEBLING is about the largest specialty wire manufacturer in America. And with progressively improved facilities and more positive controls we are constantly turning out wires with a higher uniformity of gauge, finish and mechanical properties.

Among these products that save preparation time and boost production for users are mechanical spring wires including hard drawn, soft, annealed or oil-tempered M.B., H.B. and Extra H.B.; music wire; upholsterers' spring wire and valve spring wire...all in a full range of physical properties and finishes.

Reduce your machine shut-downs and step up overall production with the Roebling specialty wire that will meet your most exacting requirements. John A. Roebling's Sons Company, Trenton 2, N. J.

ROEBLING

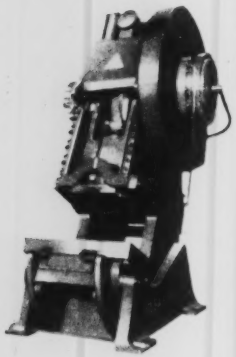
ATLANTA, 994 AVON AVE • BOSTON, 61 SLEEPER ST • CHICAGO, 5355 W. ROOSEVELT RD • CINCINNATI, 5259 FERGONIA AVE • CLEVELAND, 12323 LAKEWOOD HEIGHTS BLVD • DENVER, 4501 JACKSON ST • DETROIT, 815 FISHER BLDG • HOUSTON, 6816 NAVIGATION BLVD • LOS ANGELES, 5245 S. HARBOR BLVD • NEW YORK, 19 RECTOR ST • OMAHA, TEXAS, 1520 S. 2ND ST • PHILADELPHIA, 260 VINE ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, N. J.

Mary Lou thinks Santa's very wise

She's no expert on industrial production, but Mary Lou completely approves the way Santa does things. Her new roller skates are light in weight, smooth and strong. Her doll buggy and her toy stove and—oh, lots of the things she found under the Christmas *tree*—have those same desirable characteristics.

Mary Lou hasn't heard of metal forming presses, but already she's learned to prefer the things they make. And because press production holds costs down, Santa was able to provide *more* things to delight her little girl heart.

As a manufacturer, you can't afford to overlook this significant public preference which manifests itself at such an early age. Production by press methods means easier sales and more of them—of anything made of metal. As you plan your new lines, we urge that you talk to a Clearing man, and find out just what Clearing presses can do for your business.



CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

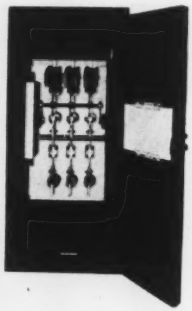
CLEARING MACHINE CORPORATION

6499 WEST 65th STREET • CHICAGO 38, ILL.

NEW PRODUCTS and equipment

interrupter. Arc interrupter chamber and quick-make, quick-break mechanism offer safe positive load interruption.

Switches are available in ratings of 400, 600, 1200, 2000 and 3000 amp, two or three pole units with



or without provisions for fuses. Delta-Star Electric Division, H. K. Porter Co. Inc., Dept. ST, 2437 Fulton St., Chicago 12, Ill.

USE REPLY CARD—CIRCLE No. 18

Snow Plow Attachment

. . . uses 50-inch angling blade

Heavier controls for easier handling are improvements made on this snow plow attachment. The

50-inch angling blade is simple to install, can be dropped with equal facility to permit resumption of normal material handling operations.

While blade is in use, 10 cu ft

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

72. Film Badge Service

Tracerlab Inc.—Operation of an inexpensive weekly film badge service for the measurement of personnel exposure to radiation from radioactivity, x-rays or radium is described in this booklet. Film survey packet consists of a number of film badges worn at various body locations.

73. Bellow Seals

Gardan Mfg. Co. — Bellow seal boots for excluding dirt from reciprocating shaft bearings are described in 4-page data folder. Stock sizes of standard bellows are tabulated. Selection of these and special types are considered, and drawings of typical applications and installations are shown.

74. Fabricated Alloys

Rolock Inc.—20-page catalog No. B-8 illustrates and describes line of heat and corrosion resistant fabricated alloys made in form of baskets, trays, racks, boxes, screens, muffles, retorts and stacking and nesting baskets for carburizing, annealing, brazing, sintering and salt bath operations. Data for ordering are given, and company fabrication facilities are shown.

75. Metal Cleaning

Oakite Products, Inc.—"8 Things To Look For When You Wash Metal By Machine" is title of informative booklet F-8490. All phases of metal cleaning are discussed to aid in selection and use of proper equipment and materials for each specific type of metal.

76. Short-Run Stampings

Federal Tool & Mfg. Co.—Facilities of this company which are available for producing short-run stampings of metal, fiber, plastics and other materials are explained in 4-page illustrated bulletin 161. They are set up to handle quantities from 2 to 10,000 in any shape or size up to 6 x 12 in. and in any thickness up to 3/16-in.

77. Nonporous Welding

Spekaluminite Co. — How Weldaluminite deporosite ends porosity, eliminates need for filler in many welding operations and stabilizes the arc in inert arc welding is described in illustrated folder. Much technical information is given. Photos and photomicrographs show how a sound weld is produced.

78. Machinery & Facilities

Sylvania Electric Products Inc.—Manufacturing and engineering services of this company's Parts Div. are described and illustrated with over 60 photos in 20-page bulletin. Plastics, formed metal parts, wire, welds, mica and electronic components are covered.

79. Worm Gear-Motor Units

U. S. Electrical Motors Inc.—Offered in ratings from ¼ to 30 hp, from 5 to 10,000 rpm, Syncrogear motors are described and outstanding features shown in 8-page form F-1650. Mounting stresses are absorbed by pyramidal base, while cantilever design protects gear alignment.

80. Industrial Porcelains

McDanel Refractory Porcelain Co. —24-page illustrated catalog "Industrial Porcelains" covers properties of high temperature porcelain and available forms. Data are given on insulators, combustion tubes, specialties, mill linings, grinding balls and laboratory jar mills.

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Penton Building, Cleveland 13, Ohio

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81. Using Flexible Tubing

Pennsylvania Flexible Metallic Tubing Co. "Flexineering" is term employed in 6-page illustrated bulletin which deals with the application of flexible metal tubing for services involving air, oil, steam, gases and volatile liquids. Available types of flexible metal hose and tubing, details of their construction and typical uses are described.

82. Industrial Equipment Line

Syntron Co. Whether it be vibratory feeders, packers and jolters, weighing equipment, electric hammers, selenium rectifiers, diesel pile hammers, drills, grinders, sanders or any of a multitude of other products, they are described and illustrated in 52-page condensed catalog No. 525. Specs, too.

83. Nickel & Stainless Data

International Nickel Co.—Three "Helpful Publication" lists tabulate available bulletins and literature on nickel alloy and stainless steels, nickel cast irons, nickel brasses and bronzes and nickel plating for production men, design engineers, metallurgists and metal users; on various Monels, Duranickel, low carbon nickel, Inconel and Incoloy; and on ductile iron. Just ask for lists A, B and DMC-1.

84. Carbide Tool Bits

Whitman & Barnes—8-page catalog 251052 lists and illustrates line of carbide tipped and high speed tool bits. Line includes turning tools, with and without lead angle; offset side cutting; offset end cutting; pointed nose; square nose and 600 angle threading tools. Red and gray banded tools for cutting steel and cast iron and nonferrous metals, respectively, are available.

85. Roll Forming Machines

San Angelo Foundry & Machine Co.—Capacities, general data and specifications for line of Lown slip roll forming machines are included in 12-page illustrated bulletin 1.49. Machines are of the initial or pinch type which allow removal of formed cylinders by opening one end of the machine.

86. Well, Water Systems

Layne & Bowler, Inc.—"Layne Well Water Systems" is title of informative 48-page illustrated guide. Pumping and auxiliary equipment for gravel wall wells, rock wells and artesian wells are covered. Also described are special drilling of air and mine shafts, underground drainage systems, boundation borings and core drilling operations. Engineer data and tables related to water systems are included.

EDITORIAL REPRINTS:

87. Ingot Mold Wash

"Ingot Mold Wash Ends Coating Fumes" is title of STEEL reprint by G. P. Michalos and D. J. Girardi of Timken Roller Bearing Co. which describes Syncoat, a mold wash that has the good qualities of tar and pitch without the heavy fumes normally present during coating and pouring. Tests prove it commercially acceptable.

88. Precision Metalworking

Handling orders for pounds instead of tons, American Silver Co., Flushing, N. Y., has built its business on jobs the big mills don't want to handle. How company formed an industrial division to custom-roll ultrathin and high-precision strip is related by Associate Editor S. W. (Sam) Baker in STEEL reprint "Custom Mill Tackles Production Headaches."

89. Scrap Conveying System

Unmatched by anything in the world of scrap handling is May-Fran system in General Motors' Fisher Body Div. which can remove a half-million pounds of scrap a day. Continuous steel belt 1145 ft long forms backbone of system taking material from feeder network and dumping bales into freight cars outside plant. H. C. Tuttle, Detroit editor, effectively describes system in STEEL reprint "Conveyor Network Moves Press Scrap."

90. More Indium Metal

New recovery method for Indium metal used in highly specialized applications, has augmented its supply, according to recent reports of the Electrochemical Society. Principal uses are in alloys with lead, tin, cadmium and bismuth for bearings, solders and glass wetting material. To find out how you can use it, get STEEL reprint "More Indium Metal . . . Can You Use It?"

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STEEL

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12-22-52

bucket can be filled with ballast or with sand for spreading on icy surfaces. Prime Mover Co., Dept. ST, Muscatine, Iowa.

USE REPLY CARD—CIRCLE No. 19

Pilot Air Valves

. . . for remote control

Series 3000 pilot air valves are used for remote control of pilot pressure operated four-way air valves and can also be used for remote control of company's air pilot hydraulic valves. Six types of operation are available: Palm button, pushbutton, cam are made in side and foot mountings. Foot and solenoid types are made only in foot mountings. Rivett Lathe & Grinder Inc., Dept. ST, Brighton 35, Boston, Mass.

USE REPLY CARD—CIRCLE No. 20

Rubber Wheels

. . . give free-cutting action

Rubber wheels for grinding ball bearing raceways provide free-cutting action, thereby minimizing generation of heat and insuring a high degree of accuracy. Chatter is virtually eliminated. Carborundum Co., Dept. ST, Niagara Falls, N. Y.

USE REPLY CARD—CIRCLE No. 21

Carbide Indicator Points

. . . of diamond-hand carbide

Durable indicator points are made of diamond-hard carbide. The wear-resistant tips take sudden gaging shock and friction of rapidly revolving cylindrical pieces with ease. Each set comes complete with five standard shaped points—flat face, ball point, needle point, conical point, convex face. Eastern Tool Co., Dept. ST, E. Hartford, Conn.

USE REPLY CARD—CIRCLE No. 22

USE A REPLY CARD

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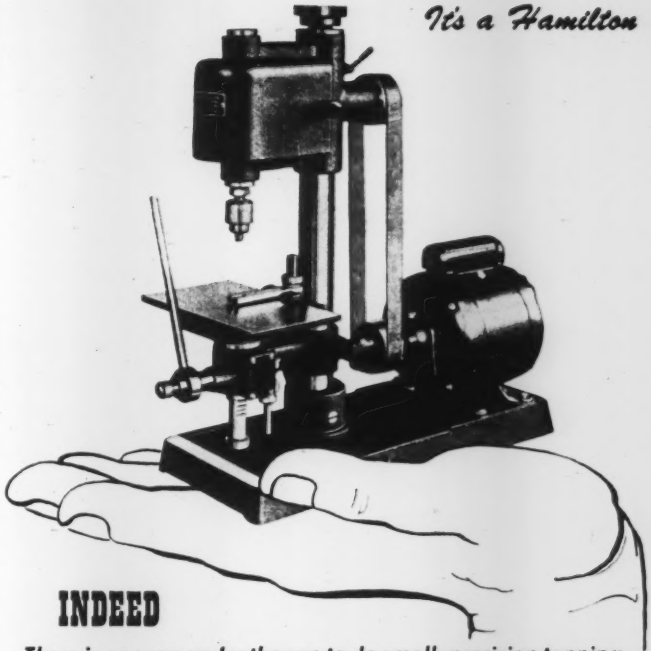

INDEED

There is no way under the sun to do small, precision tapping with "production" speed, satisfactory tap life and acceptable accuracy, other than to use a tool designed for the specific purpose.

THE *Hamilton* SUPER-SENSITIVE SMALL HOLE TAPPING MACHINE *IS SUCH A TOOL!*

The complete story of this machine is told in our Bulletin T-471.

IT'S FREE. ASK FOR IT!

THE *Hamilton* TOOL COMPANY
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WHY DO FORGEMEN LIKE THE NEW MAXIPRES?

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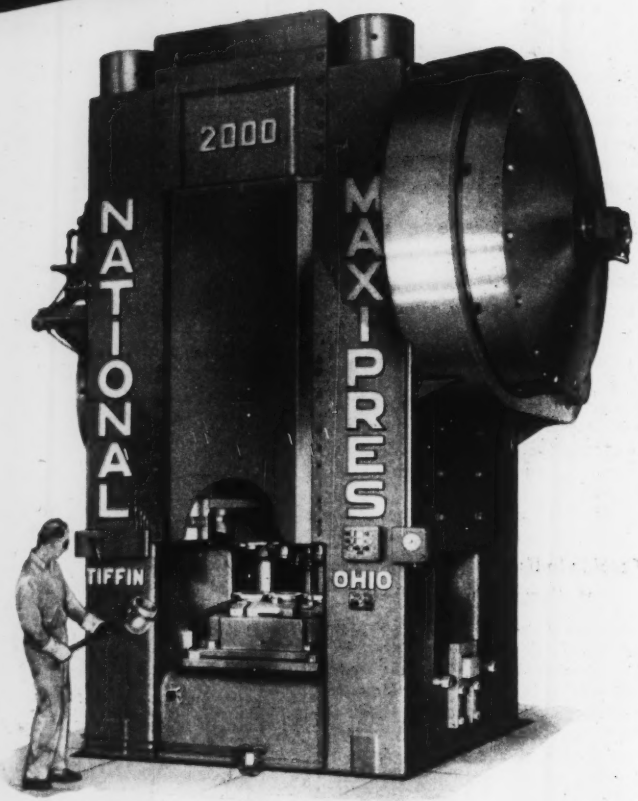
Most modern forge shops have always preferred the MAXIPRES for its rugged construction and reliable operation, *plus* NATIONAL'S superiority in die design and service.

Now—the *new* MAXIPRES, *designed for the times*, is ready to fulfill the expanding requirements of the fast-moving forging industry.



MAXIPRESSES are available in 13 sizes from 300- to 8,000-ton.

NATIONAL
MACHINERY COMPANY
TIFFIN, OHIO.

DESIGNERS AND BUILDERS OF MODERN FORGING MACHINES—MAXIPRESSES—COLD HEADERS—AND BOLT, NUT, RIVET, AND WIRE NAIL MACHINERY

Hartford Detroit Chicago

The Market Outlook

THERE'LL BE more steel for civilian goods manufacturers in the second quarter of 1953 than in any recent quarter.

But this shouldn't lead to unbounded optimism. There's considerable feeling that the new national administration will step up the flow of war materiel including ammunition, to bring the stalemated Korean war to conclusion. If that happens, the demand for some forms of steel, particularly large bars will become even more terrific than it is now. Large bars are an important material in ammunition production.

MEASURE OF WORTH—The worth of an increase in finished steel tonnage available to civilian goods makers depends on how well balanced that increase is productwise. If it's long on some products and short on others, it's not much good. To make some things, you need not only some forms of steel that are readily available but you also need large bars. An increase in the military take of large bars could unbalance the civilian steel supply even more than it is now.

THE BASIS—Decision by the Defense Production Administration to issue tickets for an increased tonnage of steel for civilian goods is based on an estimate of supply of 21,087,250 product tons in the second quarter of 1953, compared with 19,945,800 product tons expected in the third quarter of 1952 before the steel strike.

Total controlled demand for steel is now estimated at 127 per cent of supply, compared with 136 per cent in the third quarter of 1952. This shouldn't be interpreted as a drop in steel demand. The supply is increasing, so even if there were a constant demand the percentage would go down.

THE INCREASE—The increase in second-quarter allotments of steel to civilian goods makers amounts to 16.5 per cent over what had been planned for the third quarter before the steel strike.

While the total controlled demand for steel is estimated now at 127 per cent of supply, the pressure for some products is considerably above that figure. Controlled demand for stainless steel is 145 per cent of supply, says DPA. One of the big steel producers' order books had some open space for chrome stainless orders. It told its salesmen to go out and sell. They did. The company now is embarrassed with an overflow of orders for this product.

CONTRAST—The demand and supply picture in the steel industry currently is one of contrasts. While you have to queue up for some products, you can get others sooner than expected. One big producer is this month shipping small bars that were booked for January delivery.

But, over-all, the demand for steel has strengthened since the national election boosted confidence in the business outlook.

Among the major products, hot and cold-rolled carbon sheets are in strong demand.

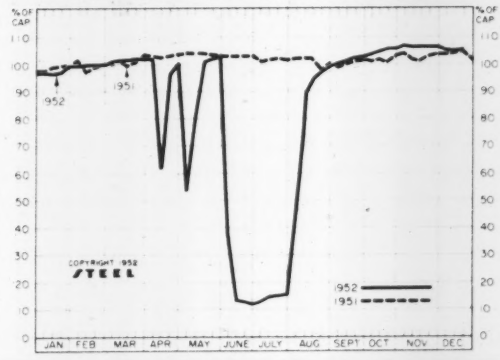
ENCOURAGEMENT—Horizon for structural steel was brightened by relaxation of some government controls on construction Jan. 1 instead of next May 1. Structural fabricator's backlogs of work have been declining.

Demand for heavy and wide plates still exceeds supply and it appears they will continue to do so through the second quarter of 1953.

HOLIDAY FOR STEEL—The steel industry's torrid pace to supply demand will drop this week to probably the lowest rate since the final week of the steelworkers' strike in July. Some mills announced finishing and ingot production will cease for four or five shifts over Christmas. If this pattern prevails nationally, the ingot production rate for this week would be around 83 per cent and output would be down 485,000 tons. There won't be such a pause for New Year's Day.

Output in the week ended Dec. 20 rose 0.5 point to 105.5 per cent of capacity and yielded approximately 2,191,000 net tons of steel for ingots and castings.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Dec. 20	Change	Same Week 1951	Same Week 1950
Pittsburgh	104.5	0.5*	99	102
Chicago	109.5	0.5*	97.5	99.5
Mid-Atlantic	101	0	101	98
Youngstown	106	0	106	105
Wheeling	100	0	103	100.5
Cleveland	111.5	5	106.5	102.5
Buffalo	106.5	0	104	104
Birmingham	108	2	105	100
New England	89	1	88	85
Cincinnati	93	0	101	102
St. Louis	101	15	87	95
Detroit	108	0	110	102
Western	107	0	103.5	105.5
Estimated national rate	105.5	0.5	104.5	101.5

Based on weekly steelmaking capacity of 2,077,040 tons in 1952, 1,999,034 tons for 1951, 1,928,721 tons for second half, 1950, 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week

The Metalworking Outlook—p. 27 Production Engineering News—p. 63

Composite Market Averages

FINISHED STEEL PRICE INDEX, Bureau of Labor Statistics	Dec. 16 1952	Dec. 9 1952	Month Ago	November Average
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Dec. 16, 1952

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheets, galv	6.915
Track bolts	9.956	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.920	Pipe, black, buttweld (100 ft)	7.099
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft)	8.887
Structural shapes	4.290	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv	6.458
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spools)	5.920
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod rolls)	13.720

FINISHED PRICE INDEX, Weighted, Calculated by STEEL*

	Dec. 16 1952	1 Week Ago	Month Ago	Year Ago	5 Yrs Ago
Index (1935-39 av. = 100)	181.31	181.31	181.31	171.92	129.28
Index in cents per lb	4.912	4.912	4.912	4.657	3.502

ARITHMETICAL PRICE COMPOSITES, Calculated by STEEL*

Finished Steel, NT	$110.98	$110.98	$110.98	$106.32	$76.09
No. 2 Fdry. Pig Iron, GT	55.04	55.04	55.04	52.24	36.89
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	36.31
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	37.54
Steelmaking Scrap, GT	43.00	43.00	42.00	43.00	39.92

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Dec. 16 1952	1 Week Ago	Month Ago	Year Ago	5 Yrs Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.223	3.318
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.954
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.15
Plates, Sparrows Point, Md	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.15
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.70
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.90
Strip, H.R., Pittsburgh	3.75-4.225	3.75-4.225	3.75-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.95	5.30-6.05	5.30-6.05	4.85-5.60	3.70
Wire, Basis, Pittsburgh	5.10-5.225	5.10-5.225	5.10-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	6.20-6.35	6.20-6.35	6.20-6.35	5.90-6.20	4.625
Tin plate, box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$5.75

SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$56.50
Wire rods, ½"-⅝", Pitts.	4.425	4.425	4.425	4.10-30	3.05

PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$37.00
Basic, Valley	54.50	54.50	54.50	52.00	36.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	38.84
No. 2 Fdry., Pitts.	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry., Chicago	55.00	55.00	55.00	52.50	36.00
No. 2 Fdry., Valley	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry., del. Phila.	59.75	59.75	59.75	57.11	39.34
No. 2 Fdry., Birm.	51.38	51.38	51.38	48.88	34.88
No. 2 Fdry. (Birm.) del. Cin.	58.93	58.93	58.93	55.49	38.74
Malleable, Valley	55.00	55.00	55.00	52.50	36.50
Malleable, Chicago	55.00	55.00	55.00	52.50	36.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	50.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*

*F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)					
No. 1 Heavy Melt., Pitts.	$44.00	$44.00	$44.00	$44.00	$40.00
No. 1 Heavy Melt., E. Pa.	41.50	41.50	41.50	42.50	41.00
No. 1 Heavy Melt., Chicago	42.50	42.50	42.50	42.50	38.75
No. 1 Heavy Melt., Valley	44.00	44.00	44.00	44.00	39.75
No. 1 Heavy Melt., Cleve.	43.00	43.00	43.00	43.00	39.25
No. 1 Heavy Melt., Buffalo	43.00	43.00	43.00	43.00	42.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	59.00
No. 1 Cast, Chicago	50.00	50.00	50.00	49.00†	55.50

†F.o.b. shipping point.

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$14.75	$14.75	$14.75	$14.75	$12.00-12.80
Beehive, Fdry., Connlsvl.	17.00	17.00	17.00	17.50	14.00-15.00
Oven, Fdry., Chicago	24.50	24.50	23.00	23.00	17.40

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
New York, del.		60.78	61.28	
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
Alabama City, Ala. R2	50.88	51.38		
Birmingham, R2	50.88	51.38		
Birmingham, S9		51.38		
Woodward, Ala. W15	50.88	51.38		
Cincinnati, del.		58.93		
Buffalo District				
Buffalo, R2	54.50	55.00	55.50	
Buffalo, H1	54.50	55.00	55.50	
Tonawanda, N.Y. W12	54.50	55.00	55.50	
No. Tonawanda, N.Y. T9		55.00	55.50	
Boston, del.	65.15	65.65	66.15	
Rochester, N.Y. del.	57.52	58.02	58.52	
Syracuse, N.Y. del.	58.62	59.12	59.62	
Chicago District				
Chicago, I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50		55.00	
Indiana Harbor, Ind. I-2	54.50		55.00	
So. Chicago, Ill. W14	54.50	55.00	55.00	
So. Chicago, Ill. Y1	54.50	55.00	55.00	
So. Chicago, Ill. U5	54.50		55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich. del.		61.30	61.30	
Cleveland District				
Cleveland, A7	54.50	55.00	55.00	55.50
Cleveland, R2	54.50	55.00	55.00	
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O., N3	54.50			55.50
Duluth, I-3			55.00	
Erie, Pa., I-3	54.50	55.00	55.00	55.50
Everett, Mass., E1		59.25	59.75	
Fontana, Calif., K1	60.50	61.00		
Granite City, Ill., G4	56.40	56.90	57.40	
St. Louis, del. (inc. tax)	57.15	57.65	58.15	
Ironton, Utah, C11	54.50	55.00		
Geneva, Utah, C11	54.50	55.00		
LoneStar, Tex., L6	50.50	*51.00	51.00	
Minnequa, Colo., C10	56.50	57.50	57.50	
Rockwood, Tenn., T3			58.50	
Pittsburgh District				
Neville Island, Pa., P6		55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge, Aliquippa, del.		56.37	56.37	56.87
McKees Rocks, del.		56.04	56.04	56.54
Lawrenceville, Homestead, Wilmerding, Monaca, del.		56.66	56.66	57.16
Verona, Trafford, del.		57.19	57.19	57.69
Brackenridge, del.		57.45	57.45	57.95
Bessemer, Pa., U5	54.50		55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50			
McKeesport, Pa., N3	54.50			55.50
Monessen, Pa., P7	56.50			
Sharpsville, Pa., S6			55.00	55.50
Steelton, Pa., B2	56.50	57.00	57.50	58.00
Swedeland, Pa., A3	58.50	59.00	59.50	60.00
Toledo, O., I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47		
Troy, N.Y., R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O., Y1	54.50	55.00	55.00	
Youngstown, Y1	54.50	55.00	55.00	
Youngstown, U5	54.50			55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$65.50
Buffalo, H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

Niagara Falls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry., frt. allowed K2	92.50
Keokuk, OH & Fdry., 12% lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn., T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton, Pa., B2	62.50
Philadelphia, delivered	66.05
Troy, N.Y., R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Dec. 18, 1952, cents per pound except as otherwise noted. Code numbers following mill points indicate producing company; key on next two pages. Changes shown in italics

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ... $81.00
Munhall,Pa. U5 ... 54.00
Seattle S24 ... 75.00

INGOTS, Alloy (NT)
Detroit R7 ... $57.00
Fontana,Calif. K1 ... 83.00
Houston S5 ... 65.00
Midland,Pa. C18 ... 57.00
Munhall,Pa. U5 ... 57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ... $59.00
Clairton,Pa. U5 ... 59.00
Ensley,Ala. T2 ... 59.00
Fairfield,Ala. T2 ... 59.00
Fontana,Calif. K1 ... 78.00
Gary,Ind. U5 ... 59.00
Johnstown,Pa. B2 ... 59.00
Lackawanna,N.Y. B2 ... 59.00
Munhall,Pa. U5 ... 59.00
So.Chicago,Ill. U5 ... 59.00
So.Duquesne,Pa. U5 ... 59.00
Carbon, Forging (NT)
Bessemer,Pa. U5 ... $70.50
Buffalo R2 ... 70.50
Canton,O. R2 ... 70.50
Clairton,Pa. U5 ... 70.50
Cleveland R2 ... 70.50
Conshohocken,Pa. A3 ... 77.50
Detroit R7 ... 73.50
Ensley,Ala. T2 ... 70.50
Fairfield,Ala. T2 ... 70.50
Fontana,Calif. K1 ... 89.50
Gary,Ind. U5 ... 70.50
Geneva,Utah C11 ... 70.50
Houston S5 ... 78.50
Johnstown,Pa. B2 ... 70.50
Lackawanna,N.Y. B2 ... 70.50
LosAngeles B3 ... 89.50
Munhall,Pa. U5 ... 70.50
Seattle B3 ... 89.50
So.Chicago R2,U5,W14 ... 70.50
So.Duquesne,Pa. U5 ... 70.50
So.SanFrancisco B3 ... 89.50
Alloy, Forging (NT)
Bethlehem,Pa. B2 ... $76.00
Buffalo R2 ... 76.00
Canton,O. R2 ... 76.00
Canton,O. T7 ... 78.60
Conshohocken,Pa. A3 ... 83.00
Detroit R7 ... 79.00
Fontana,Calif. K1 ... 95.00
Gary,Ind. U5 ... 76.00
Houston S5 ... 84.00
Ind.Harbor,Ind. Y1 ... 76.00
Johnstown,Pa. B2 ... 76.00
Lackawanna,N.Y. B2 ... 76.00
LosAngeles B3 ... 96.00
Massillon,O. R2 ... 76.00
Midland,Pa. C18 ... 76.00
Munhall,Pa. U5 ... 76.00
So.Chicago R2,U5,W14 ... 76.00
So.Duquesne,Pa. U5 ... 76.00
Struthers,O. Y1 ... 76.00
Warren,O. C17 ... 76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ... $87.50
Canton,O. R2 ... 87.50
Cleveland R2 ... 87.50
Fontana,Calif. K1 ... 108.50
Gary,Ind. U5 ... 87.50
Massillon,O. R2 ... 87.50
So.Chicago,Ill. R2 ... 87.50
So.Duquesne,Pa. U5 ... 87.50

SHEET BARS (NT)
Fontana,Calif. K1(43) ... $89.00

SKELP
Aliquippa,Pa. J5 ... $3.65
Munhall,Pa. U5 ... 3.55
Warren,O. R2 ... 3.55
Youngstown R2, U5 ... 3.55

WIRE RODS
Alton,Ill. L1 ... 4.70
AlabamaCity,Ala. R2 ... 4.325
Buffalo W12 ... 4.325
Cleveland A7 ... 4.325
Donora,Pa. A7 ... 4.325
Fairfield,Ala. T2 ... 4.325
Fontana,Calif. K1 ... 5.125
Hou.ton S5 ... 4.725
Johnstown,Pa. B2 ... 4.325
Joliet,Ill. A7 ... 4.325
KansasCity,Mo. S5 ... 4.665
LosAngeles B3 ... 5.125
Minnequa,Colo. C10 ... 4.575
Monessen,Pa. P7 ... 4.325
No.Tonawanda,N.Y B11 ... 4.325
Pittsburg,Calif. C11 ... 4.975
Portsmouth,O. P12 ... 4.525
Roebling,N.J. R5 ... 4.425
So.Chicago,Ill. R2 ... 4.325
SparrowsPoint,Md. B2 ... 4.425
Sterling,Ill.(1) N15 ... 4.325
Struthers,O. Y1 ... 4.325
Torrance,Calif. C11 ... 5.125
Worcester,Mass. A7 ... 4.625

SHEET STEEL PILING
Ind.Harbor,Ind. 1-2 ... 4.675
Lackawanna,N.Y. B2 ... 4.675
Munhall,Pa. U5 ... 4.675
So.Chicago,Ill. U5 ... 4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ... 3.85
Aliquippa,Pa. J5 ... 3.85
Bessemer,Ala. T2 ... 3.85
Bethlehem,Pa. B2 ... 3.90
Clairton,Pa. U5 ... 3.85
Fairfield,Ala. T2 ... 3.85
Fontana,Calif. K1 ... 4.45
Gary,Ind. U5 ... 3.85
Geneva,Utah C11 ... 3.85
Houston S5 ... 4.25
Ind.Harbor,Ind. 1-2 ... 3.85
Johnstown,Pa. B2 ... 3.90
KansasCity,Mo. S5 ... 4.45
Lackawanna,N.Y. B2 ... 3.90
LosAngeles B3 ... 4.45
Minnequa,Colo. C10 ... 4.30
Munhall,Pa. U5 ... 3.85
Niles,Calif.(22) P1 ... 4.56
Phoenixville,Pa. P4 ... 6.10
Seattle B3 ... 4.50
So.Chicago,Ill. U5, W14 ... 3.85
So.SanFrancisco B3 ... 4.40
Torrance,Calif. C11 ... 4.45
Weirton,W.Va. W6 ... 4.10
Wide Flange
Bethlehem,Pa. B2 ... 3.90
Clairton,Pa. U5 ... 3.85
Fontana,Calif. K1 ... 4.85
Johnstown,Pa. B2 ... 3.90
Lackawanna,N.Y. B2 ... 3.90
Munhall,Pa. U5 ... 3.85
So.Chicago,Ill. U5 ... 3.85
Alloy Stand. Shapes
Clairton,Pa. U5 ... 4.725
Fontana,Calif. K1 ... 5.925
Gary,Ind. U5 ... 4.725
Munhall,Pa. U5 ... 4.725
So.Chicago,Ill. U5 ... 4.725
H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ... 5.80
Bessemer,Ala. T2 ... 5.80
Bethlehem,Pa. B2 ... 5.80
Clairton,Pa. U5 ... 5.80
Fairfield,Ala. T2 ... 5.80
Fontana,Calif. K1 ... 6.40
Gary,Ind. U5 ... 5.80
Geneva,Utah C11 ... 5.80
Ind.Harbor,Ind. 1-2 ... 5.80
Ind.Harbor,Ind. Y1 ... 6.30
Johnstown,Pa. B2 ... 5.80
Lackawanna,N.Y. B2 ... 5.80
LosAngeles B3 ... 6.35
Munhall,Pa. U5 ... 5.80
Seattle B3 ... 6.40
So.Chicago,Ill. U5 ... 5.80
So.SanFrancisco B3 ... 6.30
Struthers,O. Y1 ... 6.30
H.S., L.A. Wide Flange
Aliquippa,Pa. J5 ... 5.50
Bethlehem,Pa. B2 ... 5.80
Lackawanna,N.Y. B2 ... 5.80
Munhall,Pa. U5 ... 5.75
So.Chicago,Ill. U5 ... 5.75
BEARING PILES
Munhall,Pa. U5 ... 3.85
So.Chicago,Ill. U5 ... 3.85
PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ... 5.95
Bessemer,Ala. T2 ... 5.95
Clairton,Pa. U5 ... 5.95
Cleveland J5, R2 ... 5.95
Conshohocken,Pa. A3 ... 6.20
Ecorse,Mich. G5 ... 6.90
Fairfield,Ala. T2 ... 5.95
Fontana,Calif.(30) K1 ... 6.55
Gary,Ind. U5 ... 5.95
Geneva,Utah C11 ... 5.95
Ind.Harbor,Ind. 1-2 ... 5.95
Ind.Harbor,Ind. Y1 ... 6.45
John.town,Pa. B2 ... 5.95
Munhall,Pa. U5 ... 5.95
Pittsburgh J5 ... 5.95
Seattle B3 ... 6.85
Sharon,Pa. S3 ... 5.95
So.Chicago,Ill. U5 ... 5.95
SparrowsPoint,Md. B2 ... 5.95
Warren,O. R2 ... 5.95
Youngstown Y1 ... 6.45
Youngstown U5 ... 5.95
PLATES, Open-Hearth Alloy
Claymont,Del. C22 ... 5.35
Coatesville,Pa. L7 ... 5.75
Conshohocken,Pa. A3 ... 5.55
Fontana,Calif. K1 ... 7.20
Gary,Ind. U5 ... 5.25
Johnstown,Pa. B2 ... 5.25
Munhall,Pa. U5 ... 5.25
Sharon,Pa. S3 ... 5.70
So.Chicago,Ill. U5 ... 5.25
SparrowsPoint,Md. B2 ... 5.25
FLOOR PLATES
Cleveland J5 ... 4.95
Conshohocken,Pa. A3 ... 4.95
Ind.Harbor,Ind. 1-2 ... 4.95
Munhall,Pa. U5 ... 4.95
So.Chicago,Ill. U5 ... 4.95
PLATES, Ingot Iron
Ashland,c.l. (15) A10 ... 4.15
Cleveland,c.l. R2 ... 4.50
Warren,O., c.l. R2 ... 4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ... 3.90
Aliquippa,Pa. J5 ... 3.90
Ashland,Ky. (15), A10 ... 3.90
Bessemer,Ala. T2 ... 3.90
Clairton,Pa. U5 ... 3.90
Claymont,Del. C22 ... 4.35
Cleveland J5, R2 ... 3.90
Coatesville,Pa. L7 ... 4.35
Conshohocken,Pa. A3 ... 4.35
Ecorse,Mich. G5 ... 4.45
Fairfield,Ala. T2 ... 3.90
Fontana,Calif.(30) K1 ... 4.50
Gary,Ind. U5 ... 3.90
GraniteCity,Ill. G4 ... 4.60
Geneva,Utah C11 ... 3.90
Harrisburg,Pa. C5 ... 6.50
Houston S5 ... 4.30
Ind.Harbor,Ind. 1-2, Y1 ... 3.90
Johnstown,Pa. B2 ... 3.90
Lackawanna,N.Y. B2 ... 3.90
Minnequa,Colo. C10 ... 4.70
Munhall,Pa. U5 ... 3.90
Pittsburgh J5 ... 3.90
Seattle B3 ... 4.80
Sharon,Pa. S3 ... 4.15
So.Chicago,Ill. U5, W14 ... 3.90
SparrowsPoint,Md. B2 ... 3.90
Steubenville,O. W10 ... 3.90
Warren,O. R2 ... 3.90
Weirton,W.Va. W6 ... 4.20
Youngstown R2, U5, Y1 ... 3.90
PLATES, Carbon A.R.
Fontana,Calif. K1 ... 5.65
Geneva,Utah C11 ... 5.05
PLATES, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa. B14 ... $ 80
BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ... 3.95
Aliquippa,Pa. J5 ... 3.95
Alton,Ill. L1 ... 4.50
Atlanta,Ga. A11 ... 4.50
Bessemer,Ala. T2 ... 3.95
Buffalo R2 ... 3.95
Canton,O. R2 ... 3.95
Clairton,Pa. U5 ... 3.95
Cleveland R2 ... 3.95
Detroit R7 ... 4.10
Ecorse,Mich. G5 ... 4.30
Emeryville,Calif. J7 ... 4.70
Fairfield,Ala. T2 ... 3.95
Fontana,Calif. K1 ... 4.65
Gary,Ind. U5 ... 3.95
Houston S5 ... 4.35
Ind.Harbor,Ind. 1-2 Y1 ... 3.95
Johnstown,Pa. B2 ... 3.95
Kansa.City,Mo. S5 ... 4.55
Lackawanna,N.Y. B2 ... 3.95
LosAngeles B3 ... 4.65
Milton,Pa. B6 ... 4.55
Minnequa,Colo. C10 ... 4.40
Niles,Calif. P1 ... 4.65
N.Tonawanda,N.Y. B11 ... 3.95
Pittsburg,Calif. C11 ... 4.65
Pittsburgh J5 ... 3.95
Seattle B3, N14 ... 4.70
So.Chicago R2,U5,W14 ... 3.95
So.Duquesne,Pa. U5 ... 3.95
So.SanFran.,Cal. B3 ... 4.70
Sterling,Ill. N15 ... 4.55
Struthers,O. Y1 ... 3.95
Torrance,Calif. C11 ... 4.65
Weirton,W.Va. W6 ... 4.10
Youngstown R2, U5 ... 3.95
BAR SIZE ANGLES, S. Shapes
Aliquippa,Pa. J5 ... 3.95
Atlanta,Ga. A11 ... 4.50
Niles,Calif. P1 ... 4.65
SanFrancisco S7 ... 5.00
BAR SIZE ANGLES; H.R CARBON
Bethlehem,Pa. B2 ... 4.15
BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ... 4.675
Buffalo R2 ... 4.675
Canton,O. R2 ... 4.675
Canton,O. T7 ... 4.72
Clairton,Pa. U5 ... 4.675
Detroit R7 ... 4.825
Ecorse,Mich. G5 ... 5.025
Fontana,Calif. K1 ... 5.725
Gary,Ind. U5 ... 4.675
Houston S5 ... 5.075
Ind.Harbor,Ind. 1-2, Y1 ... 4.675
Johnstown,Pa. B2 ... 4.675
KansasCity,Mo. S5 ... 5.275
Lackawanna,N.Y. B2 ... 4.675
LosAngeles B3 ... 5.725
Massillon,O. P2 ... 4.675
Midland,Pa. C18 ... 4.675
So.Chicago R2,U5,W14 ... 4.675
So.Duquesne,Pa. U5 ... 4.675
Struthers,O. Y1 ... 4.675
Warren,O. C17 ... 4.675
Youngstown U5 ... 4.675
BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ... 4.925
Gary,Ind. U5 ... 4.925
Youngstown U5 ... 4.925

BARS & SMALL SHAPES, H. R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ... 5.925
Bessemer,Ala. T2 ... 5.925
Bethlehem,Pa. B2 ... 5.925
Clairton,Pa. U5 ... 5.925
Cleveland R2 ... 6.025
Ecorse,Mich. G5 ... 6.675
Fairfield,Ala. T2 ... 5.925
Fontana,Calif. K1 ... 6.975
Gary,Ind. U5 ... 5.925
Ind.Harbor,Ind. 1-2 ... 5.925
IndianaHarbor,Ind. Y1 ... 6.425
Johnstown,Pa. B2 ... 5.925
Lackawanna,N.Y. B2 ... 5.925
LosAngeles B3 ... 6.625
Pittsburgh J5 ... 5.925
Seattle B3 ... 6.675
So.Duquesne,Pa. U5 ... 5.925
So.SanFrancisco B3 ... 6.675
Struthers,O. Y1 ... 6.425
Youngstown U5 ... 5.925
BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ... 4.925
BeaverFalls,Pa. R2 ... 4.925
BeaverFalls,Pa. M12 ... 4.925
Buffalo B5 ... 4.975
Camden,N.J. P13 ... 5.375
Carnegie,Pa. C12 ... 4.925
Chicago B5 ... 4.925
Chicago W18 ... 4.925
Cleveland A7, C20 ... 4.925
Detroit P17, R7 ... 5.075
Donora,Pa. A7 ... 4.925
Elyria,O. W8 ... 4.925
FranklinPark,Ill. N5 ... 4.925
Gary,Ind. R2 ... 4.925
GreenBay,Wis. F7 ... 4.925
Hammond,Ind. L2, M13 ... 4.925
Hartford,Conn. R2 ... 5.475
LosAngeles R2 ... 6.375
Mansfield,Mass. B5 ... 5.475
Massillon,O. R2, R8 ... 4.925
Monaca,Pa. S17 ... 4.925
Newark,N.J. W18 ... 5.375
Plymouth,Mich. P5 ... 5.175
Pittsburgh J5 ... 4.925
Putnam,Conn. W18 ... 5.475
Readville,Mass. C14 ... 5.475
St.Louis,Mo. M5 ... 5.30
So.Chicago,Ill. W14 ... 4.925
SpringCity,Pa. K3 ... 5.375
Struthers,O. Y1 ... 4.925
Waukegan,Ill. A7 ... 4.925
Youngstown Y1 ... 4.925
Youngstown F3 ... 4.925
BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ... 6.00
BeaverFalls,Pa. M12 ... 6.00
Bethlehem,Pa. B2 ... 6.00
Buffalo B5 ... 6.00
Camden,N.J. P13 ... 6.40
Canton,O. R2 ... 6.00
Canton,O. T7 ... 5.99
Carnegie,Pa. C12 ... 6.00
Chicago B5 ... 6.00
Chicago W18 ... 6.00
Cleveland A7 ... 6.05
Cleveland C20 ... 6.00
Detroit P17, R7 ... 6.15
Donora,Pa. A7 ... 6.05
Elyria,O. W8 ... 6.00
Gary,Ind. R2 ... 6.00
Hammond,Ind. L2, M13 ... 6.00
Hartford,Conn. R2 ... 6.45
Lackawanna,N.Y. B2 ... 6.00
Mansfield,Mass. B5 ... 6.45
Massillon,O. P2, R8 ... 6.00
Midland,Pa. C18 ... 6.00
Monaca,Pa. S17 ... 6.00
Newark,N.J. W18 ... 6.35
Plymouth,Mich. P5 ... 6.20
So.Chicago,Ill. R2, W14 ... 6.00
SpringCity,Pa. K3 ... 6.00
Struthers,O. Y1 ... 6.00
Warren,O. C17 ... 6.00
Waukegan,Ill. A7 ... 6.05
Worcester,Mass. A7 ... 6.35
Youngstown Y1 ... 6.00
Youngstown F3 ... 6.00
BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ... 3.95
Atlanta,A11 ... 4.50
Buffalo R2 ... 3.95
Cleveland R2 ... 3.95
Emeryville,Calif. J7 ... 4.70
Fairfield,Ala. T2 ... 3.95
Fontana,Calif. K1 ... 4.65
Gary,Ind. U5 ... 3.95
Houston S5 ... 4.35
Ind.Harbor,Ind. 1-2, Y1 ... 3.95
Johnstown,Pa. B2 ... 3.95
Kansa.City,Mo. S5 ... 4.55
Lackawanna,N.Y. B2 ... 3.95
LosAngeles B3 ... 4.65
Milton,Pa. B6 ... 4.55
Minnequa,Colo. C10 ... 4.75
Niles,Calif. P1 ... 4.65
Pittsburg,Calif. C11 ... 4.65
Pittsburgh J5 ... 3.95
SandSprings,Okla. S5 ... 4.85
Seattle B3, N14 ... 4.70
So.Chicago,Ill. R2 ... 3.95
So.Duquesne,Pa. U5 ... 3.95
So.SanFrancisco B3 ... 4.70
SparrowsPoint,Md. B2 ... 3.95
Sterling,Ill.(1) N15 ... 4.70
Struthers,O. Y1 ... 3.95
Torrance,Calif. C11 ... 4.65
Youngstown R2, U5 ... 3.95
BARS, Reinforcing (Fabricated; to consumers)
Huntington,W.Va. W7 ... 5.50
Johnstown, ¾-1" B2 ... 5.25
LosAngeles B3 ... 5.45
Marion,O. P11 ... 5.25
Seattle B3, N14 ... 5.80
So.SanFrancisco B3 ... 5.45
SparrowsPt., ¾-1" B2 ... 5.25
Williamsport,Pa. S19 ... 5.35
RAIL STEEL BARS
ChicagoHts.(3,4) C2 ... 5.00
ChicagoHts.(3,4) I-2 ... 4.75
Franklin,Pa.(3,4) F5 ... 5.00
FortWorth,Tex.(26) T4 ... 5.10
Huntngt.W.Va.(3) W7 ... 5.75
Marion,O.(3) P11 ... 4.75
Moline,Ill.(3) R2 ... 4.05
Tonawanda(3,4) B12 ... 5.00
Williamsport(3) S19 ... 5.25
Williamsport(4) S19 ... 5.35
BARS, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa.(S.R.) B14 ... 9.60
Economy,Pa.(D.R.)B14 ... 11.90
Economy(Staybolt)B14 ... 12.20
McK.Rks.(St.Bolt)L5 ... 14.50
McK.Rks.(S.R.) L5 ... 9.60
McK.Rks.(D.R.) L5 ... 13.00
SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ... 3.775
Ashland,Ky.(8) A10 ... 3.775
Butler,Pa. A10 ... 3.775
Cleveland J5, R2 ... 3.775
Conshohocken,Pa. A3 ... 4.175
Detroit M1 ... 4.40
Ecorse,Mich. G5 ... 3.975
Fairfield,Ala. T2 ... 3.775
Fontana,Calif. K1 ... 4.725
Gary,Ind. U5 ... 3.775
Geneva,Utah C11 ... 3.875
GraniteCity,Ill. G4 ... 4.30
Ind.Harbor,Ind. 1-2, Y1 ... 3.775
Irvin,Pa. U5 ... 3.775
Lackawanna,N.Y. B2 ... 3.775
Munhall,Pa. U5 ... 3.775
Niles,O. N12 ... 3.825
Pittsburg,Calif. C11 ... 4.475
Pittsburgh J5 ... 3.775
Sharon,Pa. S3 ... 4.175
So.Chicago,Ill. W14 ... 3.775
SparrowsPoint,Md. B2 ... 3.775
Steubenville,O. W10 ... 3.775
Torrance,Calif. C11 ... 4.475
Warren,O. R2 ... 3.775
Weirton,W.Va. W6 ... 3.775
WestLeechburg,Pa. A4 ... 3.925
Youngstown U5, Y1 ... 3.775
SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ... 4.925
Dover,O. B11 ... 5.825
Mansfield,O. E6 ... 5.65
Niles,O. N12 ... 5.675
Torrance,Calif. C11 ... 5.575
SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy
Cleveland J5, R2 ... 5.675
Conshohocken,Pa. A3 ... 5.925
Ecorse,Mich. G5 ... 6.225
Fairfield,Ala. T2 ... 5.675
Fontana,Calif. K1 ... 6.625
Gary,Ind. U5 ... 5.675
Ind.Harbor,Ind. 1-2 ... 5.675
Ind.Harbor,Ind. Y1 ... 6.175
Irvin,Pa. U5 ... 5.675
Lackawanna(35) B2 ... 5.675
Munhall,U5 ... 5.675
Pittsburgh J5 ... 5.675
Sharon,Pa. S3 ... 5.675
So.Chicago,Ill. U5 ... 5.675
SparrowsPoint(36) B2 ... 5.675
Warren,O. R2 ... 5.675
Weirton,W.Va. W6 ... 6.025
Youngstown U5 ... 5.675
Youngstown Y1 ... 6.175
SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ... 6.925
Ecorse,Mich. G5 ... 7.475
Fontana,Calif. K1 ... 7.875
Gary,Ind. U5 ... 6.925
IndianaHarbor,Ind. Y1 ... 7.425
IndianaHarbor,Ind. 1-2 ... 6.925
Irvin,Pa. U5 ... 6.925
Lackawanna(37) B2 ... 6.925
Pittsburgh J5 ... 6.925
SparrowsPoint(38) B2 ... 6.925
Warren,O. R2 ... 6.925
Weirton,W.Va. W6 ... 7.275
Youngstown Y1 ... 7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler Pa. A10	4.575
Cleveland 35 R2	4.575
Ecorse Mich. G5	4.775
Fairfield Ala. T2	4.575
Follansbee W.Va. F4	4.575
Fontana Calif. K1	5.525
Gary, Ind. U5	4.575
GraniteCity, Ill. G4	5.225
Ind.Harbor,Ind. I-2 Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh, U5	4.575
Sparrows Point,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.575
Weirton,W.Va. W6	4.775
WestLeechburg,Pa. A4	5.475
Youngstown, Y1	4.575

SHEETS, Galv'd No. 10 Steel

Arabian(City Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield Ala. T2	5.075
Gary, Ind. U5	5.075
GraniteCity, Ill. G4	5.500
Ind.Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFerry,O. W10	5.075
Niles,O. N12	6.275
Pittsburg,Calif. C11	5.825
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	5.825
Weirton,W.Va. W6	5.075

SHEETS, Galvanized No. 10, High Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(9)- R2	7.775

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	6.025
Niles,O. N12	6.825

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1 (43)	5.10
Torrance,Calif. C11	5.275

BLUED Stock, 29 ga

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind.Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown, Y1	4.925

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
Ind.ana Harbor,Ind. I-2 Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40		
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R (22 Ga.) COILS (Cut lengths 1/16c lower)

	Field	Armature	Electric	Motor
BeechBottom,W10 (cut lengths)		7.85	9.10	9.90
Brackenridge,Pa. A4		8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)		8.35	9.80	
IndianaHarbor,Ind. I-2	7.55	7.85	8.45	9.15
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10
Niles,O. N12 (cut lengths)	7.05	7.35	7.85	
Vandergrift,Pa. U5		7.85	8.35	9.60
Warren,O. R2	7.55	7.85	8.35	9.60
Zanesville,O. A10		7.85	8.35	9.60

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length 1/16c lower)

Transformer Grade	72	65	58	52
BeechBottom,W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95			
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95			
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)			15.35	15.85
Vandergrift,Pa. U5	13.80	14.35	15.35	15.85

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	
Canton,O. R2	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind.Harbor,I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	
MartinsFy,O. W10	5.875	
Pittsburg,Cal C11	6.625	
SparrowsPt. B2	5.875	
Torrance,Cal C11	6.625	

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.175
Ind.Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.525

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.425

TINPLATE, American 1.25 Coke (Base Box)

	lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2 Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.Cal. C11	9.45	9.70
Sp.Pt. Md. B2	8.80	9.05
Warren,O. R2	8.70	
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	9.75
Yorkville,O. W10	9.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.95
Middletown,O. A10	5.475
Niles,O. N12	6.275
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	5.70
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown, Y1	6.15
Youngstown, U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland 35	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta, A11	4.275
Bessemer,Ala. T2	3.725
Bridgeport,Conn.(10) S15	5.05
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.225
Conshohocken,Pa. A3	4.125
Detroit, M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	4.975
Gary,Ind. U5	3.725
Houston,Tex. S5	4.125
Ind.Harbor,Ind. I-2 Y1	3.725
Johnstown,Pa.(25) B2	3.725
Kansas City,Mo. S5	4.325
Lackawanna,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
NewBritain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A7	3.725
SanFrancisco S7	5.00
Seattle(25) B3	4.725
Seattle, N14	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B3	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt.Conn.(10) S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	6.50
KansasCity,Mo. S5	6.70
Midland,Pa. C18	5.85
NewBritn.Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Bridgeprt.Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40) T6	5.35
Ind.Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C7	6.85
Mattapan,Mass. T6	5.95
Middletown,O. A10	5.10
NewBritain(10) S15	5.80

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7		7.65	S.25	10.20	12.50
Bridgeport,Conn.(10) S15	5.80	7.65	S.25	10.20	12.50
Bristol,Conn. W1			S.55	10.50	
Carnegie,Pa. S18		7.65	S.25	10.20	12.50
Cleveland A7	5.10	7.30	S.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	S.90		
Detroit D2	6.45	7.50	S.10		
Dover,O. G6	5.70	7.65	S.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	S.40	10.35	12.65
Harrison,N.J. C18			S.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	S.55	10.50	12.80
NewBritn.Conn.(10) S15	5.80	7.65	S.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	S.25	10.20	
NewCastle,Pa. E5	5.80	7.65	S.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	S.20		
NewYork W3		7.95	S.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base		7.65	S.25	10.20	12.50
Worcester,Mass.Base	6.30	7.95	S.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	S.25	10.20	12.50
Trenton,N.J. R5		7.95	S.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	S.20	10.15	12.65
Warren,O. T3	6.20	7.65	S.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	S.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	S.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	S.55	10.50	12.80
Youngstown CS		7.65	S.25	10.20	12.50

Spring Steel (Tempered)

Trenton,N.J. R5 (29)		10.30	12.50	15.35
Harrison,N.J. C18		10.30	12.50	15.35
NewYork W3		10.30*	12.50*	15.35*
Youngstown CS		10.30	12.50	15.35

* Plus $1.575 per 100 lb.

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	4.775
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta, A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

STRIP, Cold-Rolled Alloy Steel

Bridgeprt.Conn.(10) S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn.Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	4.775
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

SHEETS, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

SHEETS, Cold-Rolled Alloy Steel

Bridgeprt.Conn.(10) S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn.Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	4.775
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta, A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Brasburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling, Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An Id.	Galv.
AlabamaCity R2	6.075	6.325
Aliquippa Jo	6.075	6.325†
Atlanta A11	6.325	6.575
Bartonville(19)K4	6.075	6.40
Buffalo W12	6.225	
Cleveland A7	6.075	6.225
Crawfordsville Ms	6.15	6.50
Donora,Pa. A7	6.075	6.225
Duluth,Minn. A7	6.075	6.225
Fairfield T2	6.075	6.225
Houston,Tex. S5	6.475	6.625
Johnstown B2	6.075	6.437
Joliet,Ill. A7	6.075	6.225
KansasCy.Mo. S5	6.675	6.825
Kokomo C16	6.175	6.425
LosAngeles B3	7.025	
Minnequa C10	6.325	6.70*
Monessen,Pa P7	6.075	6.45
Palmer W12	6.325	
Pitts.,Calif. C11	7.025	7.175
Pittsmth.(18)P12	6.475	
Rankin A7	6.075	6.225
So.Chicago,Ill. R2	6.075	6.325
So.S.Fran.,Calif. C10	7.025	7.40*
SparrowsPt. B2	6.175	6.55†
Sterling,Ill.(1) N15	6.075	6.40
Struthers,O. Y1	6.075	6.475
Torrance,Cal. C11	7.025	
Worcester A7	6.375	6.525

* Based on 14c zinc; † 14.50c zinc; ‡ 17.5c zinc.

WIRE (16 gage)	Annl'd Stone	Galv. Stone
(Add 4.7% on base and extras)		
Aliquippa J5	10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	10.25	11.55
Crawfrdsville MS	10.75	12.51
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.75	12.58‡
Kokomo C16	10.625†	12.325†
Minnequa C10	10.40	12.425*
Palmer,Mass W12	10.25	12.15
Pitts.,Cal. C11	10.60	11.90
SparrowsPt. B2	10.84	12.68‡
Waukegan A7	10.25	11.55
Worcester A7		11.85

* Based on 14c zinc; ‡ 14.50c zinc; † Includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.225
Aliquippa,Pa. J5 (42)	4.85
Atlanta A11	5.475
Alton,Ill. L1	5.45
Bartonville,Ill. K4	5.325
Buffalo W12	5.225
Chicago W13	5.475
Cleveland A7, C20	5.225
Crawfordsville,Ind. MS	5.325
Donora,Pa. A7	5.225
Duluth,Minn. A7	5.225
Fairfield,Ala. T2	5.225
Fostoria,O. (24) S1	5.725
Houston S5	5.625
Johnstown,Pa. B2	5.225
Joliet,Ill. A7	5.225
KansasCity,Mo. S5	5.825
Kokomo,Ind. C16	5.325
LosAngeles B3	6.175
Minnequa Colo. C10	5.475
Monessen,Pa. P7	5.475
Newark 6-8 ga I-1	5.88
No.Tonawanda B11	5.225
Palmer,Mass W12	5.525
Pittsburg,Calif. C11	6.175
Portsmouth,O. P12	5.625
Rankin,Pa. A7	5.225
So.Chicago,Ill. R2	5.225
So.SanFrancisco C10	6.175
SparrowsPoint,Md. B2	5.325
Sterling,Ill.(1) N15	5.225
Struthers,O. Y1	5.225
Torrance,Calif. C11	7.025
Waukegan,Ill. A7	5.225
Worcester,Mass. A7	5.625

WIRE, Cold-Rolled Flat

Anderson,Ind. U6	6.20
Buffalo W12 (43)	6.35
Cleveland A7 (43)	5.85
Crawfordsville,Ind. MS(43)	5.85
Dover,O. (26)	6.20
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16 (43)	5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. Rs (43)	5.85
Monessen,Pa. P16 (43)	6.35
Monessen,Pa. P7 (43)	6.10
Newark,N.J. R5 (43)	6.85
Trenton,N.J. R5 (43)	6.15
Worcester,Mass. A7 (43)	6.15
Worcester,Mass. T6 (43)	6.50
Worcester,Mass.W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.90
Monessen,Pa. P16 (43)	8.50
Muncie,Ind. I-7 (43)	8.70
Roebling,N.J. R5 (43)	8.80
SparrowsPt.,Md. B2 (43)	8.60
Johnstown,Pa. B2 (43)	8.50

ROPE WIRE

Alton,Ill. L1	9.15
Bartonville,Ill. K4	8.95
Buffalo W12 (43)	8.55
Fostoria,O. S1 (43)	8.55
Johnstown,Pa. B2 (43)	8.55
Monessen,Pa. P16 (43)	8.55
Monessen,Pa. P7 (43)	8.80
Muncie,Ind. I-7 (43)	8.75
Palmer,Mass. W12 (43)	8.80
Portsmouth,O. P12 (43)	8.55
Roebling,N.J. R5 (43)	8.85
SparrowsPt. B2 (43)	8.65
Struthers,O. Y1 (43)	8.55
Worcester,Ja. T6 (43)	8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43)	6.25
Alton,Ill. L1	6.85
Bartonville,Ill. K4	6.64
Buffalo W12 (43)	6.25
Cleveland A7 (43)	6.25
Donora,Pa. A7 (43)	6.25
Duluth,Minn. A7 (43)	6.25
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2 (43)	6.25
Millbury(12) N6 (43)	8.05
Minnequa,Colo. C10 (43)	6.50
Monessen,Pa. P7 (43)	6.25
Monessen,Pa. P16	6.75
Muncie,Ind. I-7 (43)	6.45
Palmer,Mass. W12 (43)	6.55
Pittsburg,Calif. C11 (43)	7.20
Roebling,N.J. R5 (43)	6.55
Portsmouth,O. P12(43)	6.25
So.Chicago,Ill. R2 (43)	6.25
So.SanFran. C10 (43)	7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)	6.25
Trenton,N.J. A7 (43)	6.55
Waukegan,Ill. A7 (43)	6.25
Worcester A7, T6 (43)	6.55
Worcester,Mass. W12(43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5	6.275
Alton,Ill. L1	6.50
Buffalo W12	6.275
Cleveland A7	6.275
Donora,Pa. A7	6.275
Duluth,Minn. A7	6.275
Johnstown,Pa. B2	6.275
LosAngeles B3	7.225
Minnequa,Colo. C10	6.325
Monessen,Pa. P16(42)‡	6.40
NewHaven,Conn. A7	6.375
Palmer,Mass. W12	6.375
Pittsburg,Calif. C11	7.225
Portsmouth,O. P12	6.275
Roebling,N.J. R5	6.375
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10	7.225
SparrowsPoint,Md. B2	6.375
Torrance,Calif. C11	7.225
Trenton,N.J. A7	6.375
Waukegan,Ill. A7	6.275
Worcester,Mass. A7	6.375

WIRE, Fine & Weaving (8" Coils)

Bartonville,Ill. K4	9.42
Buffalo W12 (43)	8.90
Chicago W13	9.32
Cleveland A7 (43)	8.90
Crawfordsville,Ind. MS(43)	8.90
Fostoria,O. S1 (43)	8.90
Johnstown,Pa. B2 (43)	8.90
Kokomo,Ind. C16 (43)	8.90
Monessen,Pa. P16 (43)	8.90
Muncie,Ind. I-7 (43)	9.10
Palmer,Mass. W12 (43)	9.20
Roebling,N.J. R5 (43)	9.20
Waukegan,Ill. A7 (43)	8.90
Worcester,Mass. A7,T6(43)	9.20

WIRE, Tire Bead

Bartonville,Ill. K4	11.51
Monessen,Pa. P16 (43)	11.40
Roebling,N.J. R5 (43)	11.55

WOVEN FENCE,9-15½ Ga. Col

AlabamaCity,Ala. R2	135
Ala.City,Ala.,17-18ga.R2	222
Aliquippa,Pa.9-14½ga.J5	139‡
Atlanta A11	140
Bartonville,Ill.(19) K4	137
Crawfordsville,Ind. MS	138
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S5	141
Johnstown,Pa. B2	138
Johnstown,17ga.,6" B2	229
Joliet,Ill. A7	133
KansasCity,Mo. S5	145
Kokomo,Ind. C16	140
Minnequa,Colo. C10	146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	135
Sterling,Ill.(1) N15	137

*Based on 14c zinc; 117½c zinc.

FENCE POSTS

	Col.
Chicagoflts.,Ill. C2	145
Duluth,Minn. A7	133
Franklin,Pa. F2	145
Huntington,W.Va. W7	148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	144
Aliquippa,Pa. J5	148‡
Atlanta A11	149
Bartonville,Ill.(19) K4	146
Crawfordsville,Ind. MS	148
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex. S5	150
Johnstown,Pa. B2	147
Joliet,Ill. A7	142
KansasCity,Mo. S5	154
Kokomo,Ind. C16	149
Minnequa,Colo. C10	153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran.,Calif. C10	167*
SparrowsPoint,Md. B2	149
Sterling,Ill.(1) N15	146

*Based on 14c zinc; 117½c zinc.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	132
Atlanta A11	135
Bartonville,Ill.(19) K4	132
Crawfordsville,Ind. MS	134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	144
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	156
SparrowsPoint,Md. B2	134
Sterling,Ill.(1) N15	132

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa. (31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85

AXLES

Ind.Harbor,Ind. S13	5.65
Johnstown,Pa. B2	5.65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	127
Aliquippa,Pa. J5 (44)	118
*Per net ton.	

JOINT BARS

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind.Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.65
KansasCity,Mo. S5	6.90
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh J5	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

RAILS

	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675		4.25
Fairfield,Ala. T2				4.25
Gary,Ind. U5	3.775	3.675	3.725	
Huntington,W.Va. W7				5.25
Indiana Harbor,Ind. I-2	3.775	3.675	3.725	
Johnstown,Pa. B2				(16)4.25
Lackawanna,N.Y. B2	3.775	3.675		4.25
Minnequa,Colo. C10	$75.50*	$73.50*		4.75
Steelton,Pa. B2	3.775	3.675		
Williamsport,Pa. S19				5.00

* Per net ton.

NAILS, Cut (100 lb keg)

To dealers (23)	
Conshohocken,Pa. A3	$7.80
Wheeling,W.Va. W10	7.80

TIE PLATES

Fairfield,Ala. T2	4.775
Gary,Ind. U5	4.775
Ind.Harbor,Ind. I-2	4.775
Lackawanna,N.Y. B2	4.775
Minnequa,Colo. C10	$95.50*
Pittsburg,Calif. C11	4.925
Seattle B3	4.925
Steelton,Pa. B2	4.775
Torrance,Calif. C11	4.925

SPIKES

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind.Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.65
KansasCity,Mo. S5	6.90
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh J5	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	116
Atlanta A11	129
Bartonville,Ill.(19) K4	126
Chicago W13	127
Crawfordsville,Ind. MS	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
Kokomo,Ind. C16	128
Minnequa,Colo. C10	(45) 123
Monessen,Pa. P7	126
Pittsburg,Calif. C11	143
Portsmouth,O. P12	132
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
SparrowsPt.,Md. B2	128
Sterling,Ill. N15	126
Torrance,Calif. C11	146
Worcester,Mass. A7	132

NAILS, Cut (100 lb keg)

To dealers (23)	
Conshohocken,Pa. A3	$7.80
Wheeling,W.Va. W10	7.80

TIE PLATES

Fairfield,Ala. T2	4.775
Gary,Ind. U5	4.775
Ind.Harbor,Ind. I-2	4.775
Lackawanna,N.Y. B2	4.775
Minnequa,Colo. C10.	$95.50*
Pittsburg,Calif. C11	4.925
Seattle B3	4.925
Steelton,Pa. B2	4.775
Torrance,Calif. C11	4.925

* Per net ton.

JOINT BARS

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind.Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.65
KansasCity,Mo. S5	6.90
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh J5	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

RAILS

	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675		4.25
Fairfield,Ala. T2				4.25
Gary,Ind. U5	3.775	3.675	3.725	
Huntington,W.Va. W7				5.25
Indiana Harbor,Ind. I-2	3.775	3.675	3.725	
Johnstown,Pa. B2				(16)4.25
Lackawanna,N.Y. B2	3.775	3.675		4.25
Minnequa,Colo. C10	$75.50*	$73.50*		4.75
Steelton,Pa. B2	3.775	3.675		
Williamsport,Pa. S19				5.00

* Per net ton.

Key to Producers

M1 McLouth Steel Corp.	P13 Precision Drawn Steel	T2 Tenn. Coal & Iron Div.
M4 Mahoning Valley Steel	P14 Pitts. Screw & Bolt Co.	T3 Tenn. Prod. & Chem.
M5 Medart Co.	P15 Pittsburgh Metallurgical	T4 Texas Steel Co.
M6 Mercer Tube & Mfg. Co.	P16 Page Steel & Wire Div., Amer. Chain & Cable	T5 Thomas Strip Division, Pittsburgh Steel Co.
M8 Mid-States Steel & Wire	P17 Plymouth Steel Co.	T6 Thompson Wire Co.
M12 Moltrup Steel Products	R1 Reeves Steel & Mfg. Co.	T7 Timken Roller Bearing
M13 Monarch Steel Co.	R2 Republic Steel Corp.	T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
N2 National Supply Co.	R3 Rhode Island Steel Corp.	U4 Universal Cyclops Steel
N3 National Tube Div.	R5 Roebling's Sons, John A.	U5 United States Steel Co.
N5 Nelsen Steel & Wire Co.	R6 Rome Strip Steel Co.	V2 Vanadium-Alloys Steel
N6 NewEng-HighCarb.Wire	R7 Rotary Electric Steel Co.	V3 Vulcan Crucible Steel Co.
N8 Newman-Crosby Steel	R8 RelianceDiv.,EatonMfg.	W1 Wallace Barnes Co.
N12 Niles Rolling Mill Div.	S1 Seneca Wire & Mfg. Co.	W2 Wallingford Steel Co.
N14 Northwst. Steel Roll Mills	S3 Sharon Steel Corp.	W3 Washburn Wire Co.
N15 Northwestern S.&W. Co.	S5 Sheffield Steel Corp.	W4 Washington Steel Corp.
N16 New Delphos Mfg. Co.	S6 Shenango Furnace Co.	W6 Weirton Steel Co.
O3 Oliver Iron & Steel Corp.	S7 Simmons Co.	W7 W. Va. Steel & Mfg. Co.
O4 Oregon Steel Mills	S8 Simonds Saw & Steel Co.	W8 West.Auto.Mach.Screw
P1 Pacific States Steel Corp.	S9 Sloss-Sheffield S.&I. Div.	W9 Wheatland Tube Co.
P2 Pacific Tube Co.	S13 Standard Forgings Corp.	W10 Wheeling Steel Corp.
P4 Phoenix Iron & Steel Co.	S14 Standard Tube Co.	W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
P5 Pilgrim Drawn Steel	S15 Stanley Works	W13 Wilson Steel & Wire Co.
P6 Pittsburgh Coke & Chem.	S16 Struthers Iron & Steel	W14 Wisconsin Steel Div. International Harvester
P7 Pittsburgh Steel Co.	S17 Superior Drawn Steel Co.	W15 Woodward Iron Co.
P8 Pittsburgh Tube Co.	S18 Superior Steel Corp.	W18 Wyckoff Steel Co.
P11 Pollak Steel Co.	S19 Sweet's Steel Co.	Y1 Youngstown Sheet & Tube
P12 Portsmouth Division, Detroit Steel Corp.	S20 Southern States Steel	
	S24 Seidelhuber Steel	

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.65-1.66
20	25	4	25	1.6-2.25
3	4	25	1	6-12.25
3	4	2	7	2.460
18	25	4	25	1 4.75
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025
9	3.25	0.5	....	1.01

W	Cr	V	Mo	
6	4	1.5	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4 V2 and V3.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Chicago or Birm. base.
(6) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6.0c and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 ga. & heavier.
(15) 7/8" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven Conn. base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.85c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter, 60" & narrower.
(38) 14 gage & lighter, 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035", 0.035" and heavier, 0.25c higher.
(41) 9.70c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.

ANOTHER NEW USE

for the Productive Flames of GAS

glazing food baking pans

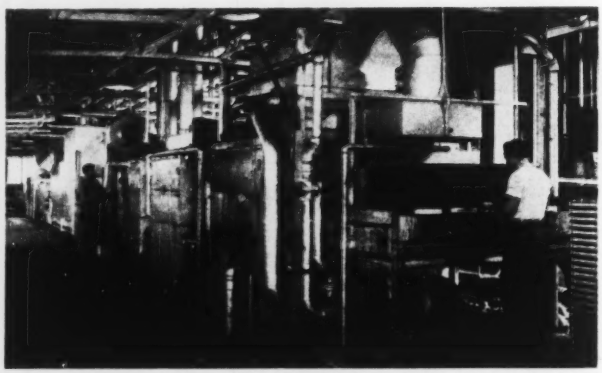
at EKCO PRODUCTS COMPANY, Chicago

Glazon Processing requires precise, automatic control of temperature, which modern industrial GAS Equipment provides.

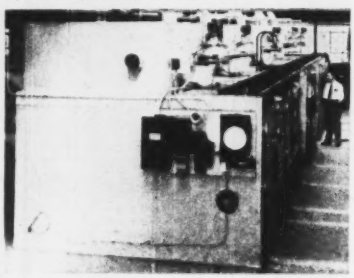
Developed by EKCO Products Company, Chicago, Illinois, the Glazon process of coating baking pans relies on GAS to supply the critical temperatures required.

This special resin coating virtually eliminates greasing of pans prior to baking, benefiting bakers by giving lower greasing costs, better production efficiency.

Five plants throughout the country service pans, new or used. After pans are cleaned, dried in a GAS-fired drier and cooled, they are stripped of former glaze and glazed by the new Glazon Processing. The pans are then cured at 425° F. a critical temperature which must be held accurately. Because the Productive Flames of GAS can be controlled accurately and automatically, GAS is the ideal fuel for this operation. These GAS curing ovens perform with high efficiency for EKCO Products Company.



Pans are processed for glazing in this combination unit which rinses, dries and cools pans. Automatic, precision control of temperature provided by GAS speeds production.



GAS curing oven installation at EKCO. This phase of the glazing process depends entirely upon a critical temperature, and the ease of maintaining this temperature. Modern GAS Equipment does this important job.

MORE AND MORE THE TREND IS TO GAS

AMERICAN GAS ASSOCIATION
420 Lexington Ave. • New York 17, N.Y.

GAS and Modern Industrial GAS Equipment are used so widely throughout all Industry because GAS heat is economical, precisely controllable, clean, and efficient. GAS is a Production-line fuel. Get the facts today from your Gas Company Representative.

GAS - THE MODERN FUEL FOR ALL INDUSTRY

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		1		1¼		1½		2		2½		3	
List Per Ft	8.5c		11.5c		17c		23c		27.5c		32c		43c		58.5c		76.5c	
Pounds Per Ft	0.85		1.13		1.68		2.28		2.73		3.12		3.68		5.82		7.62	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (c)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5	39	21	39.5	21.5	40	21.25	40	21.25		
Alton, Ill. A3	26.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5	36.5	20	37	20.5	37	20.5		
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75		
Etna, Pa. N2 (c)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25	39.5	22	40	21.75	40	21.75		
Fontana, Calif. K1 (c)	21	1.75	24	6.75	26.5	9.25	27	9	27.5	10	28	10.5	28.5	10.25	28.5	10.25		
Ind. Harbor, Ind. Y1 (c)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22	38.5	22.25	39	21.75	39	21.75		
Lorain, O. N3 (c)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25	39	28.25	39.5	28.75	40	26.25	40	26.25		
Sharon, Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50	39	21.00	39.5	21.50	40	20.75	40	20.75		
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75		
Youngstown R2 (c)	32.5	13.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75		
Youngstown Y1 (c)	32.5	13.25	35.5	17.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75		
Wheatland, Pa. W6	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25		

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½		2	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92					
Pounds Per Ft	3.68		5.82		7.62		9.20		10.88		14.81		19.18					
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv				
Aliquippa, Pa. J5 (c)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15				
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15				
Lorain, O. N3 (c)	24	12.75	27	12.75	27	12.75	29	14.75	29	14.75	33.75	19.5	33.75	19.5				
Youngstown Y1 (c)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16				

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (c)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛	¼	⅜	½	¾	1
List Per Ft	5.5c	6c	6c	9.2c	$1.09	
Pounds Per Ft	0.24	0.42	0.57	0.20	10.88	
	Blk Galv	Blk Galv	Blk Galv	Blk Galv	Blk Galv	Blk Galv
Benwood, W. Va. W10	28.5 + 0.25	23.25 + 3.5	17.75 + 7.75	33 14.25	33 14.25	
Butler, Pa. F6 (c)	30.5 1.25	25 + 1.75	20 + 5.5			
Etna, Pa. N2 (c)	30.5 1.25	25 + 1.75	20 + 5.5	33 14.25	33 14.25	
Sharon, Pa. M6 (c)	29.5 + 0.25	23 + 4.25	18 + 8.25			
Sparrows Pt., Md. B2	28.5 + 0.75	23 + 3.75	18 + 7.50			
Youngstown R2 (c)				33 15.25	33 15.25	
Wheatland, Pa. W6	28.5 + 0.75	23 + 3.75	18 + 7.50			

Galvanized pipe discounts based on zinc price of: (a), 11c; (c), 12.50c; (d), 14.50c; (e), 15.5c, with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	14.19	16.71-17.77	16.20	16.20
1¼	13	16.97	19.80-21.26	16.46	19.19
1½	13	18.22-18.77	22.08-22.82	18.19	21.41
1¾	13	20.35-21.35	24.92-25.49	20.69	24.33
2	13	22.81-23.93	27.94-28.58	23.19	27.28
2¼	13	25.69-26.69	31.38-32.18	25.84	30.42
2¼	12	28.40-29.36	34.55-35.58	28.46	33.50
2½	12	31.28-32.17	37.83-39.19	31.19	36.67
2¾	12	33.87-34.82	40.99-42.44	33.05	38.86
3	12	35.78-36.87	42.11-44.93	34.98	40.82

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	15
⅝-in. & ¾-in.	18.5
⅞-in. and larger	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire Bolts	21
Boiler & Fitting-Up Bolts	31

NUTS

	Reg.	Hvy.
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ¾-in.	12	6.5
⅞-in.-1⅛-in.	9	1
1⅛-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	16.5	6.5
⅞-in.-1⅛-in.	12	2
1⅛-in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	23	17.5
⅞-in. & 1⅛-in.	16.5	12
1⅛-in. & larger	12	6.5

SEMIFINISHED NUTS
American Standard
(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ¾-in.	26.5	22
⅞-in.-1⅛-in.	24	15
1⅛-in. & larger	13	8.5

	Light
¼-in. & smaller	35
⅜-in. to ⅝-in.	28.5
¾-in. to 1½-in.	26

SQUARE HEAD SET SCREWS
(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	38
1 in. and smaller diam. X over 6 in.	26

HEADLESS SET SCREWS
(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

STEEL STOVE BOLTS
(F.o.b. plant, per cent off list in packages)

Plain finish	48 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS
(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. and smaller	26
¾-in. through 1 in.	4

RIVETS
F.o.b. midwestern plants
Structural ½-in., larger 7.5c
½-in. under 36 off

ELECTRODES
(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17-18-20	60-72	17.85
8 to 16	48-60-72	17.85
7	48-60	19.5¢
6	48-60	20.95

CARBON

35-40	110	8.03
30	65 & 110	8.03
24	72 to 104	8.03
17 to 20	34-90	8.03

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvill fur.	$14.50-15.00
Connellsvill fdy.	16.50-17.50
New River foundry	20.50
Wise county, foundry	15.75
Wise county, furnace	13.20

OVEN FOUNDRY COKE

Keatney, N. J. ovens	$24.00
Everett, Mass., ovens:	
New England, del.	*26.05
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Ind.anapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	29.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	20.30
Cincinnati, del.	25.23
LoneStar,Tex., ovens	18.50
Philadelphia, ovens	23.95
Nevillesland,Pa.,ovens	23.00
Swedeland, Pa., ovens	23.85
St. Louis, ovens:	
St. Louis, del.	25.40
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works.

COAL, CHEMICALS

Spot, cents per gallon, ovens	
Pure benzol	30.00-35.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50
Per ton, bulk, ovens	
Sulphate of ammonia, f.o.b. cents per pound, ovens	$40-45
Phenol, 40 (carlots, non-returnable drums)	17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $13; 60% $10.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

NOTE: Current prices on clad steels appeared on page 183, Dec. 15, issue.

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.25	36.75	31.50
303	43.25	40.25	34.00
304	43.25	38.75	33.00
309	56.00	55.00	44.75
316	57.00	59.00	49.25
321	49.25	48.25	37.00
347	53.75	52.25	41.50
410	36.50	30.50	25.75
416	37.00	32.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Bait., Types 301-347 and 430 sheets, except 303 and 309 F2.

Brackenridge, Pa., sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip E4.

Butler, Pa. sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire 1-7 quotes Types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

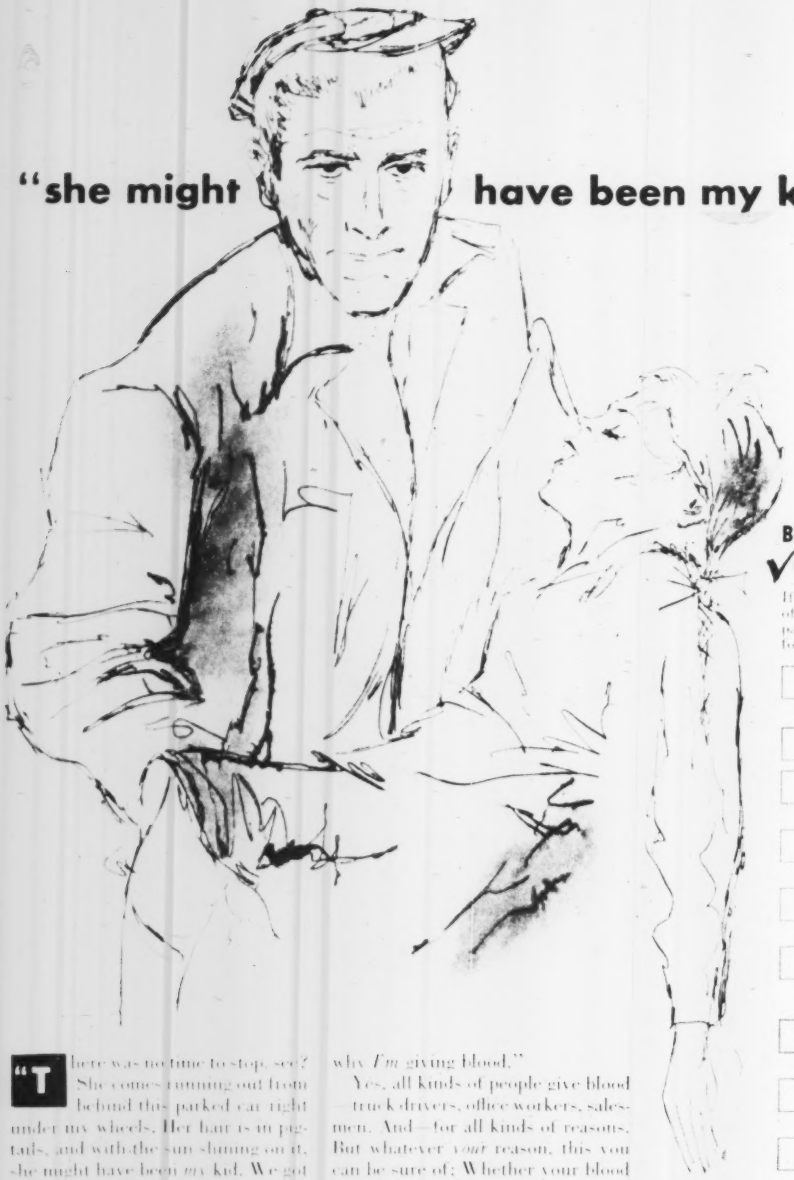
Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98.4% Fe, annealed	18.00
Unannealed	14.50
Sw-dish, c.l.f. New York, in bags, 8.85-9.95	
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe; minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	$3.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots	71.00
Brass, 20-ton lots	28.25-32.00
Bronze, 10-ton lots	51.25-60.00
Phosphor-Copper, 20-ton lots	50.00
Copper:	
Electrolytic	37.25
Reduced	34.75
Lead	22.50
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	44.50
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302	83.00
Zinc, 10-ton lots	20.00-28.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.85
Less than 1000 lb	6.00
Molybdenum:	
99.9%, minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.50

"she might have been my kid..."



"There was no time to stop, see? She comes running out from behind this parked car right under my wheels. Her hair is in pigtails, and with the sun shining on it, she might have been *my* kid. We got her to the hospital. It took 3 pints of blood to bring her around. All I have to do is remember the sound of those screaming tires—and I know why *I'm* giving blood."

Yes, all kinds of people give blood—truck drivers, office workers, salesmen. And—for all kinds of reasons. But whatever *your* reason, this you can be sure of: Whether your blood goes to a local hospital, a combat area or for Civil Defense needs—this priceless, painless gift will some day save an American life!

Business Executives!
✓Check These Questions!

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ☐ Have you given your employees time off to make blood donations?
- ☐ Has your company given any recognition to donors?
- ☐ Do you have a Blood Donor Honor Roll in your company?
- ☐ Have you arranged to have a Bloodmobile make regular visits?
- ☐ Has your management endorsed the local Blood Donor Program?
- ☐ Have you informed your employees of your company's plan of co-operation?
- ☐ Was this information given through Plant Bulletin or House Magazine?
- ☐ Have you conducted a Donor Pledge Campaign in your company?
- ☐ Have you set up a list of volunteers so that efficient plans can be made for scheduling donors?

Remember, as long as a *single* pint of blood may mean the difference between life and death for *any* American . . . the need for blood is *urgent!*

Give Blood Now

CALL YOUR RED CROSS TODAY!

NATIONAL BLOOD PROGRAM

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140††		Carbon	Floor
New York (city)	6.56	7.57	8.22	6.86		6.89	7.83‡	11.34	6.69	6.90	8.31
Jersey City (city)	6.35	7.27	8.47	6.75		6.59	7.53	9.54	6.39	6.60	8.01
Boston (city)	6.71	7.56	8.74	6.75		6.82	7.69‡	11.38	6.76	6.95	8.18
Boston (c/try)	6.51	7.36	8.54	6.55		6.42	7.49‡	11.18	6.56	6.75	7.98
Phila. (city)	6.38	7.38	8.55	6.70	8.55	6.67	7.70‡	11.04	6.42	6.49	7.62
Phila. (c/try)	6.11	7.13	8.30	6.45	8.30	6.42	7.45‡	10.79	6.17	6.24	7.36
Balt. (city)	6.61	7.37	8.57	6.62		6.61	7.62‡	11.37	6.67	6.67	7.90
Balt. (c/try)	6.81	7.17	8.37	6.42		6.41	7.42‡	11.17	6.47	6.47	7.70
Norfolk, Va.	7.60					6.44	8.45		7.25	6.64	7.33
Richmond, Va.	6.14	6.95	8.68	6.53		6.30	7.38		6.58	6.68	7.80
Wash. (w/hse.)	6.31	7.61	8.90	6.80		6.90	7.78		6.93	6.95	8.17
Buffalo (del.)	6.00	6.85	8.61	6.41		6.10	7.15‡	11.27	6.28	6.50	7.87
Buffalo (w/hse.)	5.80	6.65	8.41	6.21		5.90	6.95‡	11.07	6.08	6.30	7.67
Pitts. (w/hse.)	5.80	6.65	8.00	5.94		5.83	6.90‡	10.65	5.95	5.95	7.18
Detroit (w/hse.)	6.07	6.92	8.64	6.13	7.70-8.03	6.12	7.16‡	10.92	6.42	6.47	7.52
Cleveland (del.)	6.00	6.85	8.31	6.20		6.09	7.10‡	10.99	6.48	6.32	7.71
Cleve. (w/hse.)	5.80	6.65	8.14	6.00		5.89	6.90‡	10.79	6.28	6.12	7.51
Cincin. (city)	6.28	6.87	8.62	6.29		6.28	7.31‡	11.22	6.57	6.62	7.75
Chicago (city)	6.00	6.85	8.20	6.03		6.03	7.00‡	10.85	6.15	6.15	7.38
Chicago (w/hse.)	5.80	6.65	8.00	5.83		5.83	6.80‡	10.65	5.95	5.95	7.18
Milwau. (city)	6.17	7.02	8.37	6.20		6.20	7.27‡	11.02	6.32	6.32	7.55
Milwau. (c/try)	5.97	6.82	8.17	6.00		6.00	7.07‡	10.82	6.12	6.12	7.35
St. Louis (del.)	6.30	7.14	8.50	6.34		6.33	7.40‡	11.15	6.55	6.55	7.78
St. L. (w/hse.)	6.10	6.94	8.00	6.14		6.13	7.20‡	10.95	6.35	6.35	7.58
Birm'hm (city)	5.95	6.80	7.55§	5.95		5.95	8.40		6.10	6.25	8.85
Birm'hm (w/hse.)	5.80	6.65	7.70§	5.80		5.80	8.40		5.95	6.10	8.65
Los Ang. (city)	6.80	8.65	9.80	6.95	11.40	6.80	8.80‡	12.25	6.80	6.85	9.10
L. A. (w/hse.)	6.60	8.45	9.60	6.75	11.20	6.60	8.60‡	12.05	6.60	6.65	8.90
Seattle-Tacoma	7.37	9.17	9.85	7.14		7.14	9.62‡	10.90§	6.89	7.20	9.11
S. Fran. (w/hse.)	6.90	8.20	9.60	6.75		6.65	8.65‡	12.05	6.50	6.70	8.90

*Prices do not include gage extras; † prices include gage and coating extras except Birmingham (coating extra excluded), and Los Angeles (gage extra excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over, cold-finished bars, 2000 lb and over. ‖ 500 to 1499 lb. ¶ 450 to 1499 lb. # 1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51.5% (natural), lower lake ports.

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports.

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 67-69% (spot)	32.00

Tungsten Ore

Net ton unit, duty paid.

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 2.5:1 lump	nom.
Domestic	
(Rail nearest seller)	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l., packed 25.65c, ton lot 26.80c; less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr, 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.00c per lb of contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.75c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr, 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25c per lb of contained Cr, c.l., packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c, less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7.5%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 2" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% C grade $1.12 per lb of contained chromium; ton lot $1.14, less ton $1.16. Delivered. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si; packed 21.40c, ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe, C 1, lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y.; freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80%), 10,000 lb W or more, $1.85 per lb of contained W; 2000 lb W to 10,000 lb W, $1.95; less than 2000 lb W, $5.07, f.o.b. Niagara Falls, N. Y.

* Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis.

NOTE: Current prices on manganese, titanium and "other ferroalloys" appeared on page 171 Dec. 8 issue; calcium, zirconium, briquetted alloys and refractories, page 185, Dec. 15.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952

STEELMAKING SCRAP COMPOSITE

Dec. 18	$43.00
Dec. 11	43.00
Nov., 1952	43.00
Dec., 1951	45.00
Dec., 1947	40.13

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin, and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Buffalo, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Monongahela, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2 No. 1 Bushelling	Base
3 No. 1 Heavy Melting	—$1.00
4 No. 2 Heavy Melting	— 1.00
5 No. 2 Bundles	— 1.00
6 Machine Shop Turnings	—10.00
7 Mixed Borings and Short Turnings	— 6.00
8 Shoveling Turnings	— 6.00
9 No. 2 Bushelling	— 4.00
10 Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11 Billet, Bloom & Forge Crops	+ 7.50
12 Bar Crops & Plate	+ 5.00
13 Cast Steel	+ 5.00
14 Punchings & Plate Scrap	+ 2.50
15 Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate	
16 3 feet and under	+ 3.00
17 2 feet and under	+ 5.00
18 1 foot and under	+ 6.00
19 Briquetted Cast Iron Borings	Base
Foundry Steel	
20 2 feet and under	Base
21 1 foot and under	+ 2.00
22 Springs and Crankshafts	+ 1.00
23 Alloy Free Turnings	— 3.00
24 Heavy Turnings	— 1.00
25 Briquetted Turnings	Base
26 No. 1 Chemical Borings	— 3.00
27 No. 2 Chemical Borings	— 4.00
28 Wrought Iron	+10.00
29 Shafting	+10.00
31 Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes

32 No. 1 Bundles	— 6.00
33 No. 2 Bundles	— 9.00
34 Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer, otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace, otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces of foundries, or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2 No. 2 Heavy Melting Steel	—$2.00
3 No. 2 Steel Wheel	Base
4 Hollow Bored Axles and loco. axles with keyways between the wheelseats	Base
5 No. 1 Bushelling	— 3.50
6 No. 1 Turnings	— 3.00
7 No. 2 Turnings, Drillings & Borings	—12.00
8 No. 2 Cast Steel and uncut wheelcenters	— 6.00
9 Uncut Frogs, Switches	Base
10 Flues, Tubes & Pipes	— 8.00
11 Structural, Wrought Iron and/or steel, uncut	— 6.00
12 Destroyed Steel Cars	— 8.00
13 No. 1 Sheet Scrap	— 9.50
14 Scrap Rails, Random Lengths	+ 2.00
15 Rerolling Rails	+ 7.00
Cut Rails	
16 3 feet and under	+ 5.00
17 2 feet and under	+ 6.00
18 18 inches and under	+ 8.00
19 Cast Steel, No. 1	+ 3.00
20 Uncut Tires	+ 2.00
21 Cut Tires	+ 5.00
Bolsters & Side Frames	
22 Uncut	Base
23 Cut	+ 3.00
24 Angles, Splice Bars & Tie Plates	+ 5.00
25 Solid Steel Axles	+12.00
26 Steel Wheels, No. 3, oversize	Base
27 Steel Wheels, No. 3	+ 5.00
28 Spring Steel	+ 5.00
29 Couplers & Knuckles	+ 5.00
30 Wrought Iron	+ 8.00
31 Fireboxes	— 8.00
32 Boilers	— 6.00
33 No. 2 Sheet Scrap	—13.00
34 Carsides, Doors, Car Ends, cut apart	— 6.00
35 Unassorted Iron & Steel	— 6.00
36 Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6. For preparing into:
(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1 No. 1 (Cupola)	$48.00
2 No. 2 (Charging Box)	47.00
3 No. 3 (Hvy. Breakable)	45.00
4 No. 4 (Burnt Cast)	41.00
5 Cast Iron Brake Shoes	41.00
6 Stove Plate	46.00
7 Clean Auto Cast	52.00
8 Unstripped Motor Blocks	43.00
9 Wheels, No. 1	47.00
10 Malleable	55.00
11 Drop broken machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

Shoveling turnings	$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	47.00-48.00
Stove plate	42.00
Charging box cast	39.00-41.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	41.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 bushelling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	45.50-46.50
No. 1 machinery cast	49.00-50.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	30.50-32.50
Mixed borings, turnings	34.50-36.50
Shoveling turnings	34.50-36.50
Cast iron borings	34.50-36.50
No. 1 cupola cast	44.00-46.00
Charging box cast	41.00-43.00
Heavy breakable	38.00-40.00
Burnt cast	37.00-39.00
Cast iron brake shoes	39.00-41.00
Stove plate	41.00-43.00
Clean auto cast	48.00-48.00
Unstripped motor blocks	35.00-37.00
Malleable	48.00-48.00
Drop broken machinery	47.00-49.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	47.00-48.00
Heavy breakable	43.00-44.00
Clean auto cast	49.00-50.00
Unstripped motor blocks	40.00-41.00
Drop broken machinery	50.00-52.00
Charging box cast	44.00-45.00

Los Angeles
(Delivered)

No. 1 heavy melting	34.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00
No. 2 bundles	29.00
No. 1 cupola cast	46.00
Machine shop turnings	14.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.99
Mixed borings, turnings	29.99
Machine shop turnings	25.99
Cupola cast	40.00-41.00
Unstripped motor blocks	31.00-32.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 bushelling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	45.00-46.00††
Unstripped motor blocks	38.00††
Heavy breakable	47.50††
Machinery cast	52.00††
Charging box cast	47.50††

† Ceiling price. ‡Nominal.
$ Shipping point. ††Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	48.50
Heavy breakable	45.00

† Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	29.00
Machine shop turnings	14.00
No. 2 bundles	29.00
No. 1 cupola cast	44.00

Seattle
(F.o.b. shipping point)

No. 1 bundles	30.00
No. 1 cupola cast	41.00
Heavy breakable	36.00-38.00
Unstripped motor blocks	31.00

St. Louis
(Delivered)

No. 1 cupola	48.00
Unstripped motor blocks	37.00

Youngstown
(Delivered)

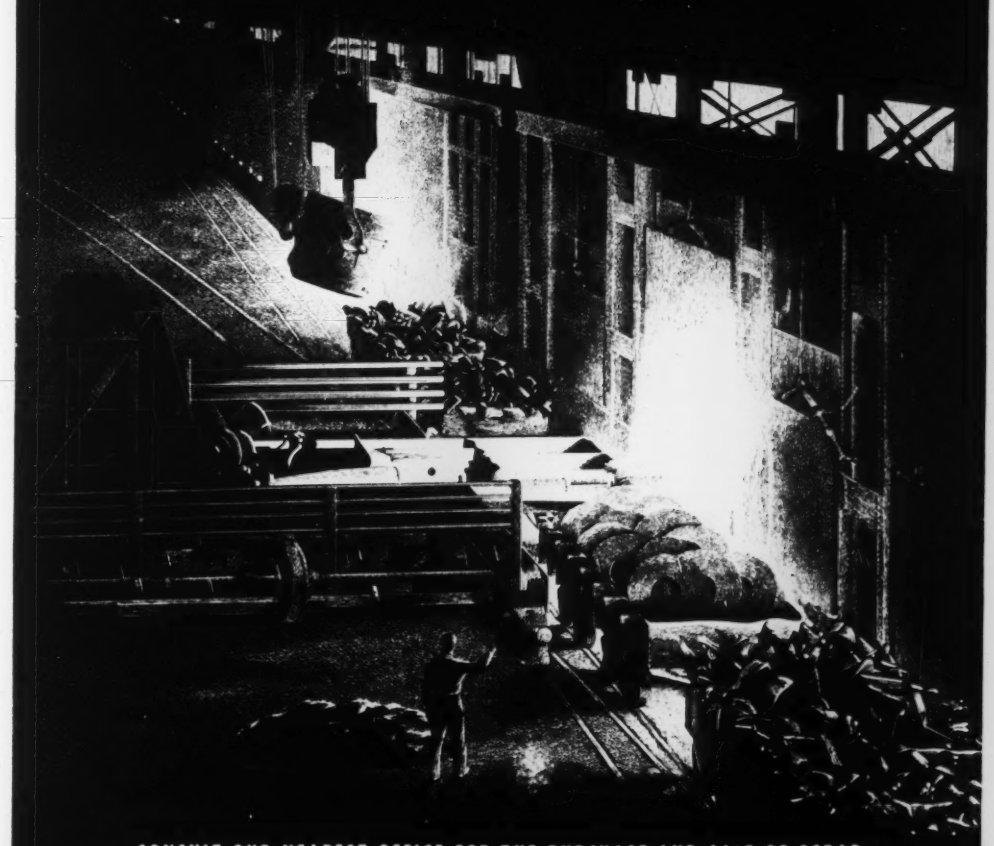
No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.50
Bushelling	30.00
Bushelling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

†F.o.b., shipping point.

for the purchase or sale of **scrap**



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STEEL

The Metal Market

Changing Aluminum Foil Into Tail Sections

Rivetted patches of aluminum foil shine while forming tail sections of Douglas C-124 Globemasters at Plymouth Motor Corp.'s Los Angeles plant. To fill defense orders, Plymouth built an 880,000-square foot addition, tripling this plant's size. Wing, tail and fuselage sections of the transport are assembled here

Evidence piles up that copper controls will be relaxed. IMC hints some people won't use all of the metal they now insist on getting

MORE AND MORE evidence is piling up that copper controls will be relaxed.

Absolute decontrol has little more than an outside chance before summer, but it's still a possibility. A better bet is for gradual freeing of the metal, with some type of small-scale priority system kept to care for defense needs—which account for only about 13 per cent of total supply—plus minimum stockpile requirements. The easing will be most apparent in granting of supplementary allocations. Then increasing leniency in original allocations will be felt until everyone is getting all the red metal he can use.

Tell-Tale Signs—One tip-off on the future of copper controls comes from the International Materials Conference. Six weeks hence IMC's copper-zinc-lead committee may find itself out of business. It has already given up free-world distribution of lead and zinc, and now promises to review the copper situation at the end of January to determine if allocations need to be continued.

"A noticeable easing of the copper market in recent months" is noted by IMC, while production holds strong. Yet in what could be its last fling at copper distribution, the committee trimmed first-quarter allocations to all users, the U. S. share amounting to almost 130,000 tons monthly during the first quarter. That's just about half of the total free world supply and down less than 1 per cent from the rations for the fourth quarter.

A Hint—With world demand easing, IMC hints some people won't use all the metal they now insist on getting. Generally, production is underestimated and consumption overestimated in reports by claimant nations.

More Freedom in Pricing

If you use steel, copper and aluminum in manufactured products, a new OPS ruling allows you to raise ceiling prices for each metal. Some manufacturers using two or more of the metals were precluded from raising ceilings when costs of one metal went up if they had already passed through costs of another. Now prices can be raised for each.

Victory for Distributors

NPA finally saw the horse-sense in aluminum distributors' pleas to allow them more flexibility in ordering from mills. In a long-awaited amendment to M-88, the replacement-of-sales system is being abandoned Jan. 1. Warehousers now can get from each supplier as much aluminum as they received in an average quarter of 1950 or as much as they received in the average quarter of the last half of 1952. Paperwork requirements are also simplified. Long irked by M-88, distributors will have a chance to build up a better product-mix and reduce accumulated stocks of slow-moving products.

Zinc Sellers Relieved

Zinc sellers are breathing more easily. Only 24,000 long tons of zinc will be put on the market by the British government during the first seven months of 1953, except for spot delivery sales. Commonwealth producers agreed to market the tonnage in addition to their own metal to minimize market fluctuations. Sales to producers will be at the average price prevailing from February through July.

Nonferrous Briefs

Nickel alloy rolling mill products from International Nickel Co.'s Huntington, W. Va., mill cost 2.5 cents per pound more since Dec. 15, but fabricators can't pass through the extra cost to their products.

Further power cuts to Pacific Coast aluminum refineries won't come for at least a month, if at all. DEPA put off till some time this week any action on further slashes from the 10 per cent across-the-board slice in mid-November.

The Big Three aluminum producers are studying Defense Boss Henry H. Fowler's proposal to boost basic aluminum prices ½ cent a pound and fabricated aluminum quotations by 4 per cent.

Sizable tonnages of aluminum redraw rod for DEPA programs are coming in from Canada.

Mercury is tightening further, now selling at $215-$218, nominal.

National Lead Co. has entered the die casting field in a big way, buying up Doehler-Jarvis Corp., nation's largest die casting producer.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley, Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c; 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 12.50c; brass special 12.75c; intermediate 13.00c; East St. Louis, high grade 13.85c, delivered.

Lead: Common 13.80c; chemical 13.90c; corroding 13.90c, St. Louis.

Primary Aluminum: 99% plus ingots 20.00c; pigs 19.00c. Base prices for 10,000 lb and over; freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades (notch bar, granulated or shot, grade 1, 18.80c; grade 2, 18.80c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) stand. and ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American (99.90-99%) and over, but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.06% max., other impurities 0.1% max.) 35.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes 99.9%, base sizes at refinery, unpacked 56.50c; 25 lb pigs 58.15c; "X" nickel shot 60.15c; "F" nickel shot or ingot for addition to cast iron 56.50c. Prices include import duty.

Mercury: Open market, spot, New York $215-$220, nominal, per 76-lb flask.

Beryllium Copper: 3.75-4.25% Be, $1.595 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: Regular straight or flat forms $1.30-$2.00; special or patented shapes $2.15.

Cobalt: 97.99% $2.40 per lb for 500 lb (kegs); $2.44 per lb for 100 lb (cases); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 83.2¢ per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze 95% 45.15, 90% 44.38; red brass, 85% 43.10, 80% 42.34; best quality 41.35; nickel silver, 18% 55.08; phosphor-bronze grade A, 5% 64.71.

Rod: Copper, hot-rolled 41.37, cold-drawn 42.62; yellow brass free cutting 33.85; commercial bronze 95% 44.84, 90% 44.07; red brass 85% 42.29, 80% 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90% 47.04; red brass, 85% 46.01.

Wire: Yellow brass 40.66; commercial bronze, 95% 45.44, 90% 44.67; red brass, 85% 43.39, 80% 42.63; best quality brass 41.64.

(Base prices effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots 32.79c, 30,000 lb lots 32.92, l.c.l. 33.42. Weatherproof, 100,000 lb 33.60, 30,000 lb 33.85c, l.c.l. 34.35. Magnet wire, del. 15,000 lb or more 38.25, l.c.l. 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In. Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	31.6	....	....
0.135-0.096	12-48	32.1	....	....
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over (Dia. cir. or distance across flats)

	Round R317-T4	Hexagonal 178-T4	178-T4
0.125	54.6	....	....
0.156-0.0188	46.2	....	....
0.219-0.313	43.6	....	....
0.375	42.0	48.3	50.4
0.406	42.0	....	....
0.438	42.0	48.3	50.4
0.469	42.0	....	....
0.500	42.0	48.3	50.4
0.531	42.0	....	....
0.563	42.0	....	47.3
0.594	42.0	....	....
0.625	42.0	45.7	47.3
0.688	42.0	....	47.3
0.750-1.000	41.0	43.1	44.8
1.063	41.0	....	43.1
1.125-1.500	39.4	41.5	43.1
1.563	38.9	....	....
1.625	38.3	....	41.5
1.688-2.000	38.3	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets: Full rolls, 140 sq ft or more $19.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $19.00 per cwt. Traps and bends: List prices plus 43%.

ZINC

Sheets 23.00c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, hot, over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 55.00-62.00c; 25 to 99 lb 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets $15; sheared mill plate, $12; strip $15; wire $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c; 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material.

Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dual type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 10.75-11.25; battery plates 5.90-6.15; linotype and stereotype 12.50-13.00; electrotype 10.75-11.00; mixed babbitt 13.75-14.00.

Zinc: Old zinc, 5.50-6.00; new die cast scrap, 5.50-6.00; old die cast scrap, 4.00-4.50.

DAILY PRICE RECORD

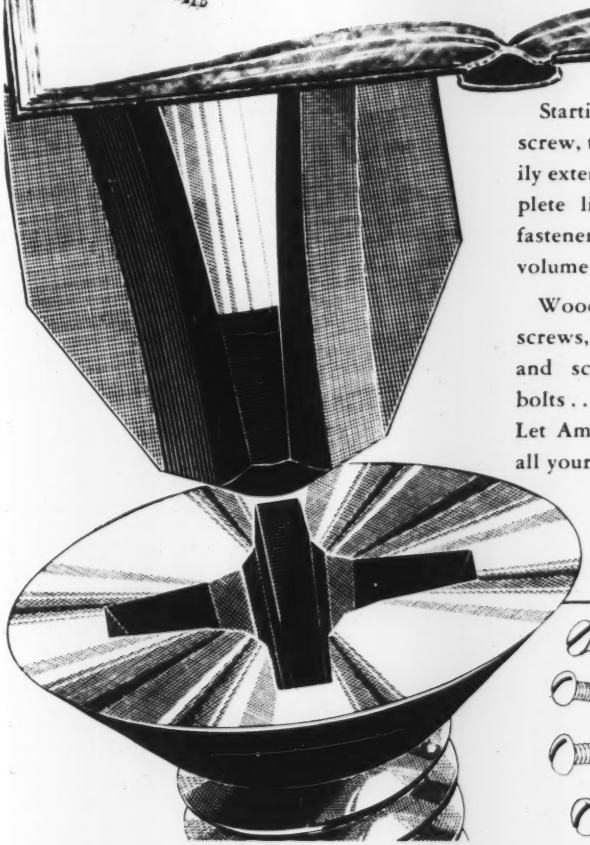
1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Dec. 1-18	24.50	13.80	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 24-29	24.50	13.80	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 20-22	24.50	14.00	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 12-19	24.50	14.30	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 11	24.50	14.00	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 3-10	24.50	13.80	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 1	24.50	13.30	12.50	121.50	20.00	39.00	56.50	83.25
Nov. Avg.	24.50	13.965	12.50	121.50	20.00	34.688	56.50	83.25
Oct. Avg.	24.50	14.226	12.50	121.50	20.00	39.00	56.50	83.25
Sept. Avg.	24.50	15.50	13.99	121.50	20.00	39.00	56.50	83.25
Aug. Avg.	24.50	15.80	14.067	121.50	19.923	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.855
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
Dec. 1951 Avg.	24.50	18.50	19.50	103.00	19.00	50.00	56.50	88.00
Dec. 1947 Avg.	21.50	14.825	10.50	85.204	15.00	33.00	35.00	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley. Lead: common grade, del. St. Louis; Zinc: prime western, F. St. Louis. Tin: Straits, del. New York. Aluminum: primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel: electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver: open market, New York. Prices: cents per pound; except silver, cents per ounce.

THE AMERICAN STORY

CHAPTER 4:

"The Eagle Spreads Its Wings"



Starting with the early patents on the wood screw, the eagle's wingspread has been steadily extended so that now American has a complete line of Phillips, slotted and special fasteners . . . with prompt delivery in any volume to any part of the country.

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Office & Plant, Norristown, Pa.
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Plates . . .

Plate Prices, Page 101

Boston—Plate fabricators with second quarter tickets are converting them into orders, notably those who delayed or cashed fourth quarter allotments with warehouse in widths wanted; more shops are low on light gage plates one-half to three-quarter-inch. While more light gage tonnage is available, it is largely in narrow widths, too narrow for economical welding. Some shops are barely able to maintain operations with present inventories of wide and heavy plates, especially non-defense schedules.

New York—With leading plate producers now booking for second quarter, there is a rush of consumers to get covered for the period. Enough business is being offered to assure high operations until middle of the year. Producers are moving somewhat cautiously in accepting new orders so as to assure protection for their regular customers.

Philadelphia—Most district plate mills have not yet opened books for second quarter, although they have less than two weeks in which to take action for that period, or for at least the first month in the second quarter, as the deadline is Jan. 2. Two mills indicate they will book on a monthly basis on the theory that they can keep closer check on schedules.

Pittsburgh—Books have been opened for second quarter military tonnage. Supply of heavy gage plates is far below demand. Customers are pressing for additional tonnage in first quarter.

Sheets, Strip . . .

Sheet and Strip Prices, Page 101 & 102

Cleveland—Sheetmakers anticipate strong demand right through first half of next year. Carryover from fourth to first quarter will be substantial and with little open space in rolling schedules available in the latter period indications are the overflow into second quarter will be large. Larger steelmaking capacity will serve to ease supply conditions to some extent over coming months but from the present appearance of the market, with no letup in pressure from the defense industries indicated, and civilian goods requirements rising, notably from appliance makers and auto builders, sellers see little marked change in the supply picture for months. The noticeable improvement in appliance industry requirements is reflected in a quickening of demand which extends to electrical grade sheets. Lifting of government controls would serve to clear away some of the confusion in the market attending distribution, but sheetmakers are not banking too heavily on developments along this line.

New York—Opening of books for second quarter on carbon sheets has resulted in a flood of orders, leading sellers declare. There may be a leveling off in demand for sheets before first half is over, but producers see no indications of it at present. Some sellers still have not taken action and indicate that when they do, which will have to be before end of this month, they may not open up for more than a month at a time. In other words, they will open for April only.

Boston—Booked through first quarter, except on some specialties, narrow cold strip mills are building up moderate volume for second quarter. Most flat-rolled orders, including sheets, are for product requirements, booked or in sight, with limited allowance for inventory. This is especially true where steel is destined for automobile assembly. So-called baby carriage industries have higher allotments and most tonnage against tickets is being placed. This increase in consumer quotas points to substantial carryover into second quarter.

Philadelphia—There are few signs of a leveling off in demand for the major grades of carbon sheets, and as books are being opened for second quarter there is a rush of consumers to get on mill schedules. Many commercial buyers haven't been able to cash in their first quarter tickets, and, with this in mind, are making every effort to fare better in the second quarter.

Pittsburgh—No improvement is evident in supply of sheet and strip here. Demand from automotive and appliance customers is strong and is expected to continue so through first quarter. Books have been opened for second quarter, and there will be some carryover from first quarter. In addition to fourth quarter tickets placed for January and February delivery, there will be about a week to ten days carryover from December.

Chicago—Save for farm equipment, virtually all sheet users are seeking additional sheet tonnage for first quarter. Congestion of mill books precludes accommodating much of this. Automotive industry is putting on tremendous pressure for first quarter. Feeling is that carmakers probably have ordered beyond tickets issued to them and unless NPA grants more there may be some canceling out of tonnage. New life in small electric motors is spurring demand for electrical sheets, reversing the recent trend.

Less Steel Shipped In 1952

New York—Three consumer classifications received more finished steel in the first nine months of 1952 than in the like 1951 period despite the fact direct shipments were 20 per cent less because of the work stoppage in the industry at midyear, according to the American Iron & Steel Institute.

Total shipments in the nine months were 47,237,000 net tons, comparing with 58,928,000 in the corresponding period of 1951.

Manufacturers of shells, tanks, guns and other military goods received over 1.4 million tons, or 613,000 more than in the 1951 period. Receipts by this category were 3 per cent of total steel shipments and compared with 1.3 per cent the preceding year.

Shipbuilders got 649,000 tons, or 9000 more than in the like period of last year. Exports were 2,296,000 tons, increase of 365,000. Warehouse take in the nine months was over 9.3 million tons, 1.3 million less than in 1951 but approximately 20 per cent of total shipments against 18.3 the year preceding.

Makers of cans and machinery, and builders of pipelines got less steel this year, but their percentages of total shipments were up. Shipments of cans and closures were 2,973,000 tons, down 384,000; machinery makers received 2.7 million tons against 3.1 million in 1951; oil and gas construction, exclusive of drilling and including mainly pipelines, were shipped 1.6 million compared with nearly 1.8 million the year preceding.

The automotive industry obtained about 7.1 million tons in the nine months or 2.7 million less than in the 1951 period. The industry's percentage of total shipments declined from 17 to 15.4. Direct shipments for construction other than oil and gas totaled about 3.8 million tons in the nine months, 1.4 million less than in the like part of the preceding year. Shipments for railroad use fell from nearly 4.5 million tons to about 2.8 million.

Among smaller users of steel, shipments in the nine months were generally lighter than in the preceding year.

Steel Bars . . .

Bar Prices, Page 101

Cleveland—While consumers are finding small-size carbon bars in more plentiful supply acute scarcity continues in the larger sizes and prospects are unpromising for any marked change for the better soon. Military and high-rated defense requirements show no sign of easing off. Bar mill order books are overloaded for first quarter and indications are there will be a substantial overflow into second quarter. Stretch-out of the military program would release considerable tonnage to civilian goods makers but such a development hinges on improvement in world political conditions and, of course, defense program policy yet to be formulated by the new Republican administration which won't come into power until Jan. 20.

Chicago—Military shell program is going to bear more heavily on some barmakers in second quarter. It isn't clear whether new quotas represent expansion in output or are merely realignment of ratios. Except for sizes under 1-in., pressure for all types of bars is terrific.

Boston—Republic Steel Corp., Copperweld Steel Co. and Bethlehem Steel Co. share in award of 1275 tons of forging bars for Springfield arsenal. Having in mind relatively high armament set-aside, consumers where possible are crowding into second quarter, covering on cold-finished and large sizes. Not until second half, probably late in that period, is much bar tonnage expected off new capacity at Morrisville, Pa.

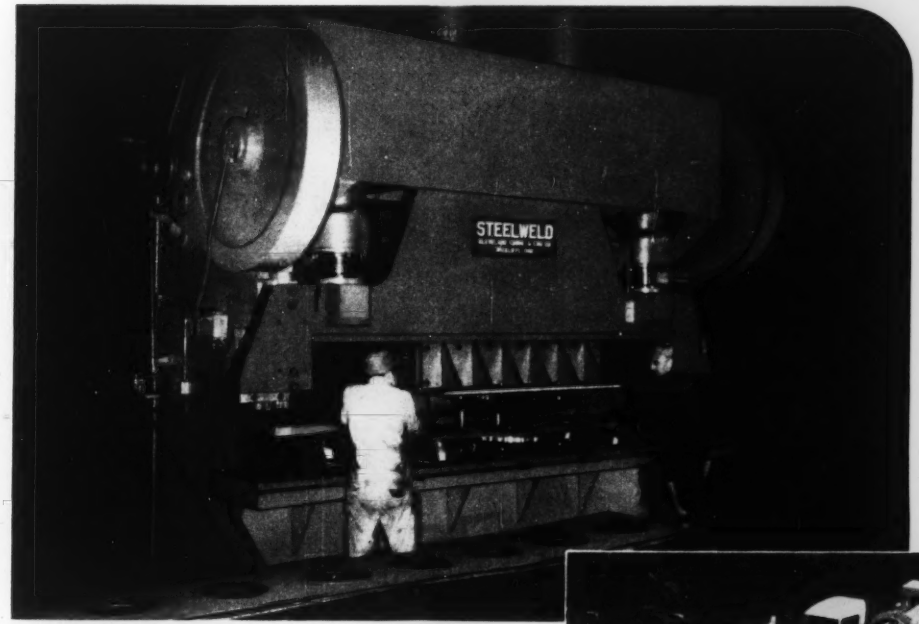
New York—While certain larger sellers of hot-rolled carbon bars have opened books for second quarter, others plan no action until end of this month and even then expect to enter new business on a highly conservative basis. In view of the particular stringency in this product, especially the larger sizes, some sellers feel that much is to be gained by waiting as long as possible in accepting new orders, as consumers will have a better idea as to what they will actually need and they, the producers, will have a better idea as to what they can supply.

Philadelphia—Carbon bar consumers are losing no time getting orders in for second quarter now that mills

Punches 15" Holes For Warner & Swasey Gradalls

Also Performs Bending and Flanging Operations

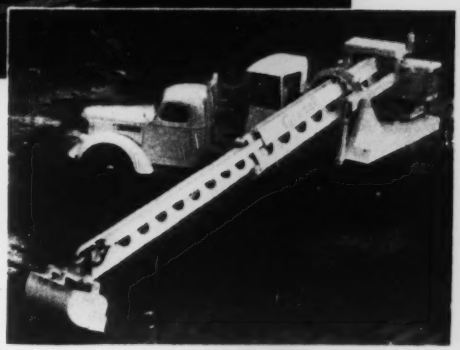
Flanging 15" diameter holes in outer boom plates of 3/16" steel. The holes were punched previously on this press.



Practically all of the steel plate on Warner & Swasey Gradalls, manufactured at their New Philadelphia, Ohio plant, is formed, punched and flanged on a Steelweld Press which is designed to brake steel plate up to 16' x ½".

One of the more interesting jobs done on this machine is the punching of 15" diameter holes in Gradall boom plates, followed by a flanging operation. Through use of special movable punches, many smaller holes of various sizes are made at a time, in locations as desired.

The versatility of Steelweld Presses to handle efficiently many varied operations has proven of tremendous advantage to many users. You, too, may find the many features of these machines of great help. A representative will be glad to give you the details.



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are opening order books for that period. Some producers may not take official action until end of the month, but buyers anticipating that the mills will have to open up by that time are rushing specifications in advance for what advantage may possibly accrue.

Pittsburgh—Despite record production of steel bars, there still isn't enough tonnage to go around. Automotive component manufacturers are pressing for tonnage to meet production demands when new models start to roll.

Semifinished Steel . . .

Semifinished Prices, Page 104

Pittsburgh—Ingot steel is not plentiful and forge shops are looking for supply sources well into second quarter. Jordan Iron & Steel Corp. plans a $4 million steelworks at Roanoke, W. Va., adjacent its present plant. It will include a furnace melt shop, blooming mill, five stand hot strip mill.

Cleveland—Ingot operations in this district are booming along at above-capacity pace. Some slowing down is expected over the holidays, but all the signs point to high-level activity at local furnaces and mills into second quarter next year. Current employment at local steelworks is placed at 18,770 against 18,385 in September and 17,760 a year ago. Employment is forecast at 19,042 in January.

Los Angeles—Bethlehem Pacific Coast Steel Corp. facilities construction program scheduled for completion by 1953 will increase ingot production of Los Angeles, San Francisco, and Seattle plants by 15 per cent, to 900,000 tons of ingots yearly.

Wire . . .

Wire Prices, Page 104

Boston—While wire orders are heavier, some first quarter capacity for fine wire and high carbon specialties is open. Nails and merchant products are also available, but on numerous heavier gages, carbon wire books are filled. Inventories of manufacturers' wire with consumers are not over-heavy and procurement policy points toward cautious buying for inventory in weeks ahead. Except for scattered sizes and grades, screw manufacturers are satisfied with regular first quarter allotments, plus what overdue cold heading tonnage is due them. More finished screw sizes and grades are available from stock.

Commodity rate on wire rods, Worcester to Bridgewater, Mass., is being established at $3.05 per gross ton. Rate has been $4.04, minimum 56,000 pounds. Substantial volume of nail specialties are produced at Bridgewater.

New York—United States Steel Export Co. has increased its prices on bright nails and staples applying concurrently with changes in domestic prices. It is now quoting nails at $6.96 per 100 pounds, and staples at $6.91, effective as of Dec. 6, with freight included to New York, Philadelphia and Baltimore. Prices are net cash, subject to adjustment to seller's price in effect at time of shipment from the mill and also current extras.

Philadelphia—Manufacturers wire is in tight supply but there is a noticeable easing in merchant grades. Most wire jobbers have substantially more merchant tonnage than they can move quickly. This is particularly true of nails.

Pig Iron . . .

Pig Iron Prices, Page 104

Philadelphia—With some foundries closing down for all of Christmas week and most suspending for at least the long Christmas and New Year's weekends, movement of pig iron will taper off from now on through the early part of January. An improvement is anticipated then, although there are no indications that the pressure for shipments will be particularly strong for some weeks to come.

Pittsburgh—U. S. Steel Co. returned to production No. 5 blast furnace at Edgar Thomson works. The furnace has been down for partial relining since Oct. 16. It has daily capacity of 1100 tons of iron.

Pittsburgh Coke & Chemical Co.'s new $8 million blast furnace at Neville Island was lighted Dec. 11. The stack, with hearth diameter of 22 feet, will add approximately 300,000 net tons yearly to the company's pig iron capacity, bringing the total to 800,000 tons. Slag from the new furnace will go to the firm's nearby cement plant, also being expanded. Recently a new battery of 35 by-product coke ovens was placed in operation. The new furnace was built by the Freyn Division, Koppers Co. The Pittsburgh-Des Moines Steel Co., subcontractor, fabricated and erected a large part of the 6000 tons of steel used in its construction. Pittsburgh Coke & Chemical Co. is the only major merchant pig iron producer in the greater Pittsburgh area.

Boston—Orders for January placed with outside furnaces are more numerous, reflecting in part lower, unbalanced stocks at the Everett stack. Iron is being parceled out more cautiously by this furnace where capacity output will not be reached until late January. Shop melt remains well below capacity, but there are signs of some pickup at jobbing foundries.

New York—Although some improvement in shipments of pig iron is anticipated after the holidays, sellers generally look for little real gain as compared with the pre-holiday movement for at least several weeks. Actually some believe it will be at least two months, if not longer, before district pig iron consumers will be specifying much more freely. At least one reservation, however, hinges on government inventory limitations. If they are lifted beyond the 30-day period there might be a spurt, with consumers building up stocks for periods of 45 to 60 days in line with normal practice.

Foreign iron is being offered on a more competitive basis, Belgium being the latest seller to come out with an offering that is more or less in line with the domestic market. It is quoting around $58 c.i.f. eastern seaboard per metric ton on basic and foundry grades. However, details are not clear as to specification nor as to delivery promises. But whatever they are, the trend appears to be toward closer competition with domestic producers and with a knowledge on the part of foreign sellers that they will probably have to shade the market here if they are going to attract much business.

Buffalo—With two blast furnaces down for repairs both basic and foundry pig iron is firmer. Smaller foundries continue to search for new business but the big melters are active and pig iron sellers report no trouble disposing of their output.

Cleveland—While merchant iron sellers are able to dispose of all their production without difficulty, they are not being pressed for shipments like they were some months back. Two factors account for this: One, the government's 30-day limitation on consumer inventories, and two, lagging activity at some jobbing foundries. View in the trade is that the lifting of the government restrictions on stocks would likely result in some increase in stockpiling after the holiday season. The spurt, however, it is thought would depend upon the extent to which foundry operations in general picked up and, as of the moment, no early upturn is signaled. Latest employment data for the industry locally show the number employed in iron and steel foundries on Dec. 1 was 9406 compared with 9576 in September. Employment of 9069 is forecast for January.

Higher malleable castings prices are in prospect. The Office of Price Stabilization has granted the malleable founders permission to raise their prices 6.2 per cent, effective Dec. 19. Prices had been frozen since January, 1951, and all cost increases since have been absorbed by the foundries. The increase follows a government survey of labor and material costs.

Chicago—Demand for pig iron is tightening somewhat as foundries experience quickening orders for castings. Household appliances, for example, are operating at good rate and are projecting heavy schedules for first quarter.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 105

New York—Change in discount terms equivalent to a reduction in prices has been extended on large purchases of elastic stop nuts by the Elastic Stop Nut Corp. of America, Union, N. J. Previously orders for 100,000 pieces or more received a maximum discount of 50 per cent off list. Effective Dec. 1, orders for 500,000 to 1 million pieces will receive an additional 6 per cent; on orders in excess of 1 million an additional 10 per cent will be allowed. The company will continue to allow combination of orders for any standard parts to obtain maximum discounts, and will accept bulk quantity orders for future delivery when the order specifies firm shipping schedules.

Pittsburgh—Pittsburgh Screw and Bolt Corp. has been awarded a contract of nearly half a million dollars for bolts, nuts and washers required for the outer shell of the third tube of the New York Port Authority's Lincoln tunnel, under the Hudson river. Work begins on the new order in January. Ten months will be required to finish the job. It calls for more than 1 million bolts, nuts and washers.

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Iron Ore . . .

Iron Ore Prices, Page 102

Cleveland—Erie railroad's ore storage dock at North Randall, O., reached a winter's supply peak of 1,040,000 tons of iron ore as the lake navigation season ended. Steel mills in Warren, Niles, Youngstown, Sharon and Pittsburgh will draw from this storage during the winter. The railroad's lakefront dock handled 192 vessels carrying 2,057,369 tons of ore during the 1952 lake shipping season. More than a million tons were moved directly to the steel mills. The balance went into storage.

Shipments of iron ore from the head of the lakes last month broke all records for November, 9,294,947 gross tons being transported against 5,695,381 in November, 1951. The best previous November was in 1942 with 4,582,425 tons.

The Lake Superior Iron Ore Association has just published the second edition of the *Lake Superior Iron Ores Mining Directory & Statistical Record*. This presents statistical data on the individual mining properties in the Lake Superior district of the U. S. and Canada, and includes a series of new range maps and a regional map. Various tables relating to the district ore industry and other tables pertaining to iron ore generally are presented.

Mine records show total shipments through 1950, and mine shipment tables, which follow the descriptions of each range, show annual shipments since 1937.

Structural Shapes . . .

Structural Shape Prices, Page 101

New York—Structural activity still lags and while a certain relaxation of structural controls Jan. 1 will stimulate small commercial work, the over-all effect on fabricating shop operations is not expected to be pronounced for some time.

New bids eventually will be asked by the New York State Thruway Authority on the Tarrytown-Nyack bridge superstructure, involving an estimated 60,000 to 65,000 tons. Fabricators refused to submit bids for the original opening, dated Dec. 15, because the $35,761,000 estimate by the Authority's engineers was considered too low. The Authority will substitute another design with a cantilever truss mainspan replacing the tide arch of the original design, it is reported.

Boston—Not until more structural steel is available through heavier allotments for free distribution will most structural shops reach capacity operations. Shops are nearer capacity on girder work, but are plagued by limited plate tonnage as well as structurals.

Philadelphia—While new work is not heavy, operations at most structural fabricating shops are limited only by inadequacy of steel supply. Steel is coming in more freely but the fabricators continue to have difficulty balancing stocks. Public work still dominates demand.

Pittsburgh—Fabricators are pressing for additional structural steel tonnage. Whether they will get it is problematical.

Chicago—Relaxation of building construction controls as of Jan. 1 instead of May 1 as originally planned comes as welcome news to structural fabricators. Backlogs have been declining and the NPA move may serve as a stimulant. Availability of shapes is expected to improve by second quarter.

Seattle—In addition to heavy public works projected for early 1953 many private construction jobs are on the boards or planned for early action.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 101

Los Angeles—Valuation of engineering awards for southern California, southern Nevada and Arizona totaled $15,870,391 in November, 51.1 per cent lower than in October and 38.9 per cent lower than in November 1951. Military construction activity continued its downward trend for the fifth consecutive month but demand for reinforcing material is sustained by peak construction of highways, streets and bridges.

Warehouse . . .

Warehouse Prices, Page 107

Cleveland—Some slackening of demand over the holidays is anticipated by local warehouses but December order volume, nevertheless, is seen holding up pretty well on a level with that in November. The distributors' inventory position is somewhat improved, but stocks continue highly unbalanced and no noticeable change in conditions is expected before second quarter, especially in bars and heavy plates. Steady demand on the warehouses is indicated in the weeks ahead, district manufacturing industry operating at a fast pace with no sign of letdown, except for the holidays, in prospect. Manufacturing employment in Cleveland is steady, survey of 289 major local firms showing November employment at 268,000, down about 300 from September. During November makers of aircraft parts hired about 1230 workers, metal fabricators added 220, while ordnance and equipment firms generally boosted employment rolls by 770. Employers plan to hire or recall about 1950 workers by January.

Boston—When more steel is available from mills, warehouse distributors expect less demand from normal mill buyers. They have always returned to primary producers after pinch periods. One indication that warehouses are better supplied on flat-rolled is that they are less willing to take odd-lot accumulations. Volume is still restricted by limited stocks, notably unbalance in size ranges.

Philadelphia—Contrary to earlier trade expectations, warehouse demand this month may exceed that in November despite the holidays and yearend inventory-taking. Daily volume has been stepping up to a point where some distributors now believe it will offset any decline from now on through the end of the year.

Pittsburgh—Warehouses in this area are getting a chance to catch their breath and replenish inventories. Balanced stocks are distant because customer demand is expected to be as strong as ever after turn of the year. Current receipts are substantial.

Chicago—Steel warehouses are making little headway in inventory pickup. Demand is so intense incoming mill receipts are moved out immediately.

Seattle—Warehouse stocks average only 35 per cent of normal. Inventories are badly unbalanced.

Tubular Goods . . .

Tubular Goods Prices, Page 105

Seattle—Cast iron pipe market is slow but within 30 days improved demand from municipalities is expected. Bids are in at Seattle for a system expansion involving 175 tons. About 100 tons are pending at Omak and Auburn, Wash. Bids are in at Weiser, Idaho, for approximately 100 tons. Dalles, Oreg., voters approved a $175,000 bond issue to finance a proposed 16-in. supply line, bids to be invited in first quarter.

Scrap . . .

Scrap Prices, Page 108

Buffalo—Increased tension and added strength were noted in the scrap market last week as heavy snow slowed shipments from dealers' yards to mills. Consumers are dipping into reserve stocks to maintain record ingot production. A 2-month embargo on shipments to the district's second largest consumer is expected to be lifted shortly. A leading user of cast scrap placed some new business at prevailing under-ceiling prices.

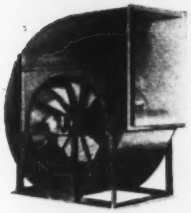
Cleveland—Yearend sluggishness prevails in the scrap market and no noticeable pickup in activity is expected until after the holidays. The steel mills continue to take in quality material but they are not pressing the market with their inventories sizable. Dealers' stocks are described as moderate. The few new transactions reported in the steel grades are at ceiling prices. Such is not the case with regard to the cast grades, however, which continue soft pricewise.

Boston—Steel scrap is firm at ceiling prices with moderate tonnage moving to consumers. Price structure on steel grades is firm from dealers to consumers, but the latter are holding to specifications. Cast grades are slow with prices wobbly.

New York—Scrap brokers anticipate a general lull in the market from now until the middle of January. Most mills have a comfortable supply on hand, and while they are taking in all the tonnage of good grades offered, they are not pressing hard for material, nor are they likely to for a while. Demand for cast grades continues sluggish.

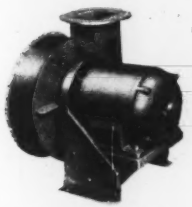
Philadelphia—Steel scrap continues in good demand with prices at ceiling levels. Most mills are exerting no strong pressure, but nevertheless, are taking in all the scrap offered, especially where quality is satisfactory. Cast grades, on the other hand, show further weakness. Machinery cast is available at $52 delivered and heavy breakable is softer in tone. Leading pipe mills are offering $45 to $46 delivered for No. 1 cupola cast although some smaller buyers are paying up to $48, depending upon the grade. Unstripped motor blocks are moving slowly at $38 delivered.

Pittsburgh—Scrap shipments are



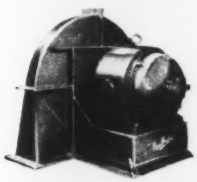
LIMIT-LOAD FANS

For large-scale ventilation. Quiet, non-overloading. Sizes up to 500,000 c.f.m. Bulletin 4737.



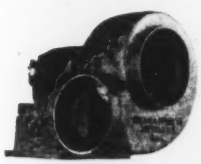
TYPE "CB" PRESSURE BLOWERS

For single-stage pressure blowing up to 20 pounds, per square inch. Bulletin 4555-A.



TYPE "CC" PRESSURE BLOWERS

In sizes for pressures up to 4 pounds and capacities up to 75,000 c.f.m. Bulletin 4553-A.



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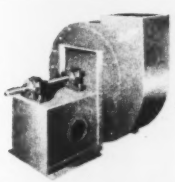
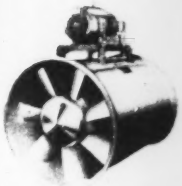


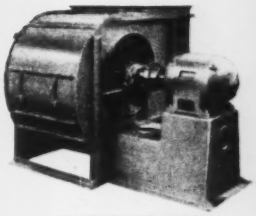
INDUSTRIAL EXHAUSTERS

With interchangeable wheels for air exhausting or materials conveying. All-welded. Bulletin 3576.



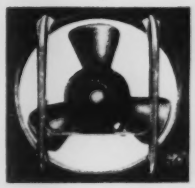
AXIAL FLOW FANS

For light-duty ventilation and air conditioning service. Compact, non-overloading. Bulletin 4553-C.



POWER PLANT FANS

Primary, forced draft, induced draft—built for the severest service. Bulletin 4750.



BREEZO FANS

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VOLUME FANS

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BELTED VENT SETS

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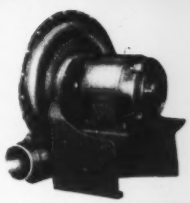
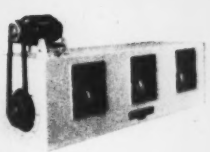


"E" BLOWERS-EXHAUSTERS

For oil or gas furnace: furnace blowing, line boosting, cleaning. Bulletin 4014-C.



SHORTBOY VENTILATING SETS

New high efficiency all-aluminum blowers with hollow shaft. Bulletin 4701.

limited. Only items of a specialized nature are getting attention from buyers. Sluggish condition of the market is expected to continue through end of the year. Dealers have been able to accumulate a good inventory due to favorable weather.

Los Angeles—Steelmaking scrap movement is heavier and dealers are having one of the busiest months in history.

Seattle—Buyers for large consumers report the scrap market is weaker from a supply standpoint although prices are firm. Bundles continue about $5 per ton under ceiling. In the face of reports that the California market is well supplied and prices have declined $2 there, in the Pacific Northwest recepts have declined. Increased consumption, due to new plants and heavier production, is overtaxing supply sources. At the Puget Sound Navy Yard 35 bids were submitted for 1000 tons of steel scrap which sold at ceiling, $24.88.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4500 tons, high-level cantilever bridge and approaches, Savannah river, linking Georgia and South Carolina, Savannah, Ga., to American Bridge Co., Pittsburgh, through Merritt-Chapman & Scott, New York, general contractor.

1000 tons, high-level cantilever bridge and approaches, Savannah river, linking Georgia and South Carolina, Savannah, Ga., to Bethlehem Steel Co., Bethlehem, Pa., through Merritt-Chapman & Scott Corp., New York, general contractor.

40 tons, steel truss bridge, Farmington river, Simsbury, Conn., to American Bridge Co., Pittsburgh; Jones Construction Co., Columbia, Conn., general contractor.

210 tons, building, Tyer Rubber Co., Andover, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.

STRUCTURAL STEEL PENDING

9000 tons, state thruway work, Seneca county, New York; bids closed Dec. 18.

1600 tons, state thruway work, Erie county, New York; bids closed Dec. 18.

520 tons, construction at Hanford Works; bids in to Kaiser Engineering Co., Oakland, Calif.

500 tons, state thruway work in Schenectady, Onondaga and Monroe counties, New York; bids Dec. 30.

300 tons, substation and other projects; bids in to Bonneville Power Administration, Portland, Oreg.

2000 tons, connection work on the New Jersey side, George Washington bridge, Port of New York Authority, New York; bids Dec. 23.

Unstated tonnage, plant building, Sylvania Steel Products Co., Winchester, Ky.; bids Jan. 8.

REINFORCING BARS . . .

REINFORCING BARS PLACED

22,000 tons, reinforcing bars, bearing piles and steel sheet piling, substructure, Hudson river bridge, Nyack, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., through Merritt-Chapman & Scott Corp., New York, general contractor.

3400 tons, high level cantilever bridge and approaches, Savannah river, linking Georgia and South Carolina, Savannah, Ga., to Cayce-Hall & Southern Co., Atlanta, Ga., through Merritt-Chapman & Scott Corp., New York, general contractor.

1000 tons, naval barracks, etc., Ault Field, Washington state, to Northwest Steel Rolling Mills, Inc., Seattle; Sound Construction & Engineering Co., Seattle, general contractor.

100 tons, apartment structure, Ketchikan, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; L. E. Baldwin Co., general contractor.

270 tons, clinic building, Virginia Mason Hospital, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; Watts Construction Co., Seattle, general contractor.

REINFORCING BARS PENDING

2820 tons, Corps of Engineers, Pittsburgh; bids in.

930 tons, mostly rail steel, Corps of Engineers, Pittsburgh; bids Dec. 23; bids in also on 105 tons, structural steel angles.

Unstated, electronics laboratory, Ladd Air Field, Alaska; general contract to Boen-Sealand Construction Co., Seattle, low $383,250.

Unstated, 360-foot Montana state highway bridge, Park county; bids to Helena, Dec. 18.

Unstated, addition to Seattle plant of Air Reduction Pacific Co., Cawdrey & Vemo, Seattle, general award at $103,653.

Unstated, two dormitories, Ladd Air Field, Alaska, Baker & Ford Co., Bellingham, Wash., low to U. S. Engineer, $1,136,196.

Unstated, refrigerator building, Eleson Field, Alaska, United Contractors, Fairbanks, Alaska, low to U. S. Engineer, $367,954.

PLATES . . .

PLATES PLACED

500 tons, penstocks at Lookout Point dam, Oregon state, to American Pipe & Construction Co., Portland, Oreg.

1600 tons, elevated water storage tank, Sioux City, Iowa, Corps of Engineers, Omaha, Nebr., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

150 tons, bulk fuel storage tanks, Sedalia airfield base, Corps of Engineers, Kansas City, Kans., to Chicago Bridge & Iron Co., Chicago.

100 tons, 200,000-gallon elevated water tank, Oak Ridge, Tenn., to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

300 tons, storage tank farm expansion, Portland and Astoria, Oreg.; bids in to Shell Oil Co., Portland.

220 tons, structural steel plates, Corps of Engineers, Pittsburgh; bids in.

Unstated, several jet fuel storage tanks, Geiger Field, Spokane, Wash.; bids to U. S. Engineer, Seattle, Jan. 7; tank materials government-furnished.

PIPE . . .

CAST IRON PIPE PENDING

175 tons, system extension, Seattle; bids called Dec. 17.

Unstated, 3700 feet various sizes; bids to J. J. Englehart, clerk, Weiser, Idaho, Dec. 8.

Unstated, $175,000 16-inch main supply pipe line, The Dalles, Oreg.; bond issue approved; city plans bid call in first quarter.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Union Pacific, 15 gas turbine electric locomotives, to General Electric Co.'s locomotive and car equipment department, Schenectady, N. Y.

Union Pacific, 54 diesel units, to Electro-Motive Division, General Motors Corp., La Grange, Ill., and 15 gas turbine electric locomotives to General Electric Co., Schenectady, N. Y.; the diesel units will comprise eight "A" and 14 "B" 2250 hp passenger units, ten 1500-hp road switchers and twenty-two 1200-hp yard switchers.

RAILROAD CARS PLACED

Atlanta & West Point, one passenger coach, to the Budd Co., Philadelphia.

Chicago Heights Terminal Transfer, 25 fifty-ton box cars, to American Car & Foundry Co., New York.

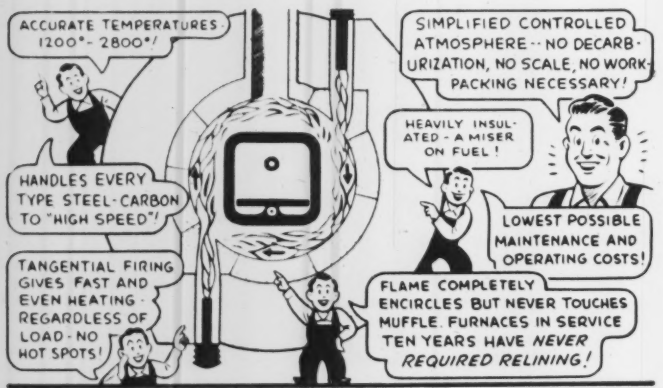
Chicago, Rock Island & Pacific, seven mail cars and five baggage cars to the Budd Co., Philadelphia.

Gulf, Mobile & Ohio, 100 fifty-ton pulp wood cars, to its own shops.

New York, New Haven & Hartford, 100 flat cars, to its own Maybrook, N. Y., shops.

Reading, 100 fifty-ton pulp wood cars, to Johnstown, Pa., plant of Bethlehem Steel Co.

St. Louis Southwestern, 75 seventy-ton gondolas, to Johnstown, Pa., plant of Bethlehem Steel Co.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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

GE Builds "Stacking Pit"

In another step to speed up manufacture of large steam turbine-generators, General Electric Co. completed construction of a "stacking pit" at a cost of more than $500,000. The pit will be used for core assembly of armatures in the 20-acre turbine plant in Schenectady. It provides adequate space and heavier equipment for the stacking operation. During this step in manufacturing, the generator frame is placed on end. The armature core is formed by stacking flat steel punchings inside the shell. Upwards of 150,000 punchings are used in the armatures of large machines. Hydraulic jacks, capable of exerting 600 tons' pressure, are used to press the punchings together.

Baldwin Reorganizes Sales Setup

Baldwin - Lima - Hamilton Corp., Philadelphia, announced that the Eddystone, Pa., sales organization has been divided functionally into two major groups to be known as the transportation sales department and the industrial sales department. Lewis A. Hester was appointed general sales manager of the former department; Andrew Liston, general sales manager of the latter department. The transportation sales department will handle sales of locomotives, locomotive renewal parts, dump cars and other items of rail transportation equipment produced by the Eddystone & Standard Steel Works Division. The industrial sales department will handle sales of hydraulic turbines, testing equipment, hydraulic presses and power tools, industrial weldments, castings, ordnance material and a variety of other products.

American Instrument To Build Plant

American Instrument Co. Inc., Silver Spring, Md., manufacturer of laboratory and scientific equipment, will erect a branch plant at Savage, Md., containing about 50,000 sq ft.

Alcoa Expands Vancouver Plant

Cable-producing capacity of Aluminum Co. of America's Vancouver Fabricating Works will be greatly increased in the immediate future. The project will cost about $1,720,000, will be started in January and is scheduled for completion in late 1953. Additional cable-stranding machines and wire-drawing machines will be installed under the program. Three buildings, having a combined area of 50,000 sq ft, will be constructed for the additional cable mill facilities. Work was started last month on new fabricating ingot casting facilities at Vancouver, Wash., scheduled to be finished in May at an estimated cost of $1,200,000.

Machine Tool Maker Names Agent

Hartford Special Machinery Co., Hartford, Conn., appointed Bert Carpenter Co., Birmingham, Mich., as its distributor of automatic drilling and tapping machinery in the eastern Michigan territory.

Cooper-Bessemer Forms Export Firms

Cooper-Bessemer Corp., Mt. Vernon, O., organized two wholly-owned subsidiary companies. Known as Cooper-Bessemer International Corp. and Cooper-Bessemer Overseas Corp., the companies serve as exclusive export sales distributors for Cooper-Bessemer engines and compressors. Both companies are headed by Michael C. Pollock, with a staff of assistants, located at 25 W. 43rd St., New York.

Tool and Machinery Firm Moves

Edward Andrews Tools & Machinery Co. moved to larger quarters at 420 W. Nine Mile Rd., Hazel Park, Mich. The company is a supplier of cutting tools, drills, tool bits, reamers, dowel pins, abrasives and general factory equipment.

Detroit Harvester Co. Expands

Clinton Machine Co.'s Warner Division, Clinton, Mich., manufacturer of aircraft and ordnance hydraulics, was purchased by Detroit Harvester Co., Detroit. Clinton Machine Co. will concentrate its efforts on the

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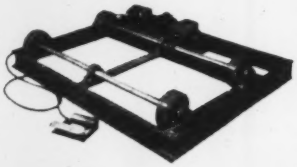

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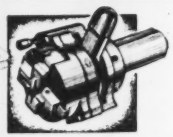

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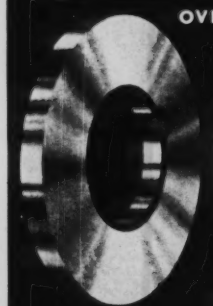

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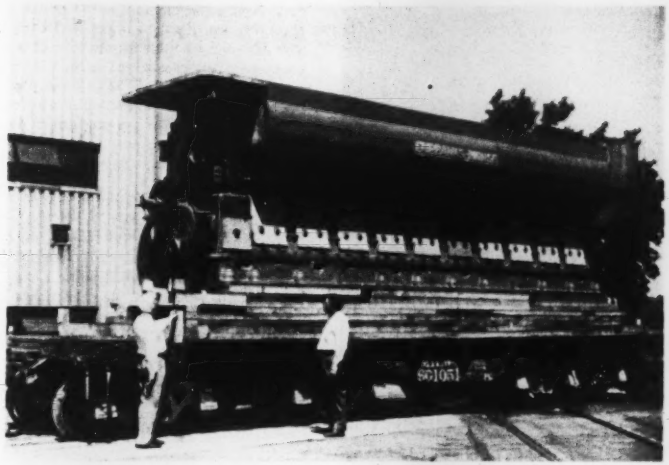


Dual-Fuel Engine is Heavy Carload

Leaving the Beloit, Wis., factory where it was manufactured, this Fairbanks, Morse & Co. ten-cylinder dual-fuel engine towers above the flat car which is to carry it to Texas. The unit's 17-foot height created transportation problems, but the 3500-horsepower engine is now installed in a power station at Denton, Tex., where it will provide the city with an extra 2500 kilowatts of electric power

manufacture of gasoline engines at its Maquoketa, Iowa, plant, and in the making of metal disintegrators and chain saws at its Clinton factories.

Sundberg-Ferar Open Headquarters

Sundberg-Ferar, industrial designers, officially opened their new headquarters at 1204 S. Woodward Ave., Royal Oak, Mich.

Machine Tool Firm Opens Branch

Diamond Machine Tool Co., Pico, Calif., opened a branch sales office at 2816 S. Santa Fe Ave., Los Angeles. A complete stock of Diamond lathes, milling machines, punch presses and boring mills will be on display in the new office.

Thomas Tool & Die Expands

Thomas Tool & Die Co., Baltimore, equipped about 2000 sq ft at 1713 South Clinton St., that city, for fabrication and general machine shop work. E. C. Thomas and J. B. Elliott are partners.

Yale & Towne Builds Plant in South

Yale & Towne Mfg. Co., New York, will construct a lock manufacturing plant at Lenoir City, Tenn. The factory is part of Yale & Towne's plant expansion and modernization program and is scheduled for completion during the early summer of 1953. The company is constructing a hardware manufacturing plant at Gallatin, Tenn., and is operating hardware plants at Salem, Va., and Berrien Springs, Mich., in addition to its original plant at Stamford, Conn.

The plants at Philadelphia and Chicago are devoted exclusively to manufacture of materials handling equipment.

International Harvester To Expand

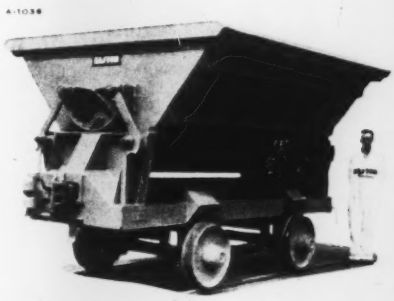
International Harvester Co. of Canada Ltd. will build a $500,000 advanced engineering and product engineering building at its Hamilton, Ont., plant. The building will provide work area for research in agricultural implement design and will contain 26,000 sq ft of floor space.

Sloss-Sheffield Appoints Agent

F. W. Marshall & Co., Philadelphia, was appointed eastern representative by Sloss-Sheffield Steel & Iron Division, U. S. Pipe & Foundry Co., Birmingham, for sale of pig iron.

Blackall Heads Mechanical Engineers

Frederick S. Blackall Jr., president and treasurer, Taft-Peirce Mfg. Co., Woonsocket, R. I., was elected president of American Society of Mechanical Engineers for 1953. He succeeds Reginald J. S. Pigott, chief engineer, Gulf Research & Development Co., Pittsburgh. Regional vice presidents are: Henry R. Kessler, manager, Republic Flow Meters Co., New York; Paul R. Yopp, district sales manager, Babcock & Wilcox Co., Atlanta, Ga.; Ben George Elliott, professor of me-



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chanical engineering, University of Wisconsin, Madison, Wis.; and Harry R. Pearson, personnel director, Dallas Power & Light Co., Dallas. Elected directors at-large are: David W. R. Morgan, vice president, Westinghouse Electric Corp., Philadelphia; Ralph L. Goetzinberger, vice president, Minneapolis-Honeywell Regulator Co., Washington.

Federal Electric To Build Factory

Federal Electric Products Co., Los Angeles, will construct a $350,000 factory and office building at 3333 San Fernando Rd., that city.

Electronic Parts Maker Expanding

Gilfillan Bros. Inc., Los Angeles, is constructing two buildings at 3628 Crenshaw Blvd., that city. The plant at 1815 Venice Blvd. will move to the new plant in January and the plant at 1901 S. Bundy Dr. will move in February. The firm under the direction of S. W. Gilfillan, president, manufactures electronic parts.

Heat-Treats More Aluminum Forgings

Consolidated Industries Inc., West Cheshire, Conn., installed additional furnaces to increase by 100 per cent the plant's capacity for heat-treating aluminum forgings. Edward S. Russell is president of the company.

Philton Represents Colonial Alloys

Colonial Alloys Co., Philadelphia, appointed Philton Co., Wilmington, Del., to represent it throughout the world in the sale of its products and the granting of licenses to use the company's processes. Colonial originated and owns various patents and techniques having to do with anodizing, chemical polishing, cleaning and dyeing of aluminum and its alloys. Activities of Philton will be directed by John F. Scheetz of Alderson & Sessions, marketing and management counsel, in association with David Craven, president, Jennings Machine Corp., both of Philadelphia.

Hammond Buys Keyes Tank Firms

Hammond Iron Works, Warren, Pa., purchased the Keyes Tank & Supply Co., Casper, Wyo., and the Keyes Tank Co., Provo, Utah. Management of the two new plants will remain unchanged.

I. T. & T. Licenses Sarkes Tarzian

A patent license agreement granting Sarkes Tarzian Inc., Bloomington, Ind., the right to manufacture selenium rectifier stacks in accordance with methods and processes covered by patents owned or controlled by International Telephone & Telegraph Corp., New York, has been completed.

Family Lights Furnace

Three generations of a steelmaking family combine to light Pittsburgh Coke & Chemical Co.'s new blast furnace, in Pittsburgh. John Marshall, two years old, helps his father and grandfather begin operations at the $8 million furnace. At the left is John's father, C. Taylor Marshall, assistant to the plant manager. John's grandfather, R. M. Marshall, company president, stands at right

Vickers Expands on West Coast

Additional facilities to meet the specialized hydraulic design needs of West Coast manufacturing plants are provided by Vickers Inc., division of Sperry Corp., at its El Segundo Division in metropolitan Los Angeles. Engineering will be handled by a group specializing in development of custom-built power units and other special hydraulic items, while design, engineering and production of standard hydraulic items will continue at the main Vickers plant in Detroit. The company began production of aircraft components about Aug. 1 at its new plant in Joplin, Mo. This plant provides greatly increased manufacturing facilities for production of hydraulic pumps, motors, accumulators and power transmissions.

Brainard Forms Canadian Division

Formation of Brainard Steel Canadian Division, Sharon Steel Corp., will be effective Jan. 1. The company, with general offices and plant in Toronto, Ont., will manufacture various steel strapping products. General manager of the Canadian division is P. J. McArthur.

Hayes Subsidiary To Build Plant

Aircraft Armaments Inc., Baltimore, plans to build a 60,000 sq ft plant at Texas, Md. Construction is to be completed early in 1953. The company now occupies three Baltimore locations, all of which will be consolidated at the new location. The company is a subsidiary of Hayes Mfg. Co., Grand Rapids, Mich., maker of automobile bodies and accessories.

Firm Licensed To Make Everdur

Alloys & Products Inc., New York, is now producing and marketing Everdur ingot for the foundry industry. The name Everdur is a copyrighted trademark of American Brass Co., Waterbury, Conn., under whose licensing agreement the product will be made and sold.

Will Build $23 Million Fiber Plant

Daniel Construction Co., Birmingham, was awarded a contract to construct a $23 million fiber plant at Hopewell, Va., for National Aniline Division, Allied Chemical & Dye Corp., New York. The plant is scheduled to be in production in two years.

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24 ga.	36" x 96"	9 Sheets	
22 ga.	36" x 96"	182 Sheets	
19 ga.	36" x 96"	16 Sheets	
19 ga.	44" x 120"	12 Sheets	
16 ga.	44" x 120"	31 Sheets	
13 ga.	36" x 110"	42 Sheets	
13 ga.	36" x 120"	21 Sheets	
13 ga.	44" x 120"	18 Sheets	
12 ga.	48" x 144"	1 Sheet	
11 ga.	48" x 144"	16 Sheets	
3/16"	36" x 96"	7 Plates	
3" Dia. Rd. Bars		394 ft. R M L.	
4" Dia. Rd. Bars		189 ft. R M L.	

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22 ga.	48" x 120"	21 Sheets	Type 347
19 ga.	30" x 120"	24 Sheets	Type 347
12 ga.	48" x 144"	31 Sheets	Type 321
10 ga.	36" x 95"	74 Sheets	Type 304
9 ga.	36" x 95"	104 Sheets	Type 321
9 ga.	48" x 120"	2 Sheets	Type 321
9 ga.	48" x 144"	2 Sheets	Type 321
1/4"	36" x 95"	55 Plates	Type 321
3/8"	36" x 96"	2 Plates	Type 321
3/8"	36" x 120"	2 Plates	Type 321
1/2"	35" x 64"	3 Plates	Type 321

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Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-Ton, Cross Dump

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All classifications other than "Positions Wanted," set solid, minimum 50 words, $12.50, each additional word .25; all capitals, minimum 50 words $16.00, each additional word .32; all capitals leaded, minimum 50 words $19.50, each additional word .39. "Positions Wanted" set solid, minimum 25 words, $3.00, each additional word .12; all capitals, minimum 25 words $3.75, each additional word .15; all capitals, leaded, minimum 25 words $4.50, each additional word .18. Keyed address takes seven words. Cash with order necessary on "Positions Wanted" advertisements. Replies forwarded without charge. These rates are subject to 15 per cent agency commission and 2 per cent cash discount ten days. Displayed classified rates on request. Address your copy and instructions to STEEL, Penton Bldg., Cleveland 13, Ohio.

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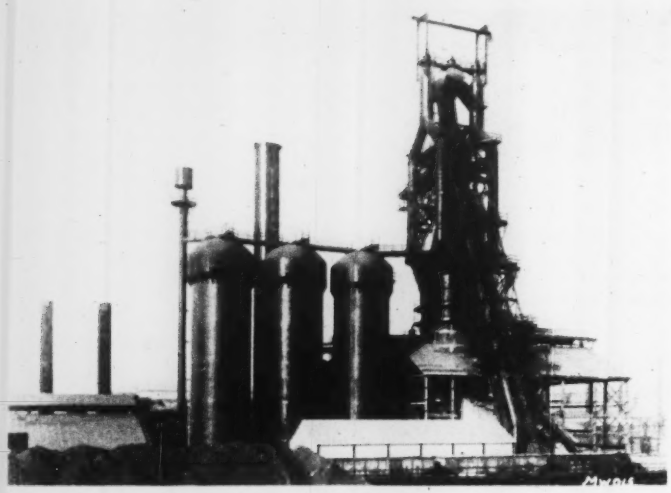

New Furnace Promises Heavy Production

Upwards of 1000 tons of molten iron daily will flow from Crucible Steel Co. of America's new $12 million blast furnace at Midland, Pa. Rising to the height of an 18-story office building, the furnace includes latest improvements in steelmaking. Operation is electronically-controlled and completely automatic with the exception of a single operation, that of tapping the flow of the molten metal

Trailmobile Starts Plant Expansion

Trailmobile Inc., subsidiary of Pullman Inc., Cincinnati, inaugurated an extensive program of expansion of its production facilities and re-layout of its present plant in that city. The project will cost in excess of $1 million.

Official Opening of Bauxite Mine Set

Official opening of the bauxite mining operations at Ocho Rios, Jamaica, by Reynolds Jamaica Mines Ltd. on Jan. 9 will be attended by about 130 American industrialists and financiers. The company is a subsidiary of Reynolds Metals Co., Louisville.

Engine Parts Plant Nears Completion

Construction of Thompson Products Inc.'s $6 million jet aircraft engine parts plant at St. Catharines, Ont., is nearing completion with the first production activity scheduled to start this month. Some machinery and equipment has arrived and has been placed in the plant which is expected to be in complete operation early next year. The building has a floor area of 150,000 sq ft.

Bethlehem Lays Superfreighter Keel

Bethlehem Pacific Coast Steel Corp., San Francisco, laid the keel at its shipyard in that city for the first of five superfreighters to be built by the company for United States Maritime Administration. The ship will be 560 feet in length. Cost of the five will exceed $47 million, part of a group of 35 contracted for by the Maritime Administration across the country.

Karp Metal Products Names Agents

Karp Metal Products Co. Inc., Brooklyn, N. Y., specialist in sheet metal fabrications for the electronics and allied industries, appointed as its representatives W. S. Harmon Co., Los Angeles, and David H. Ross Co., San Francisco.

Offers Air Conditioning Equipment

Mechanical Equipment Co., Knoxville, Tenn., was named representative for that territory by United States Air Conditioning Corp., Minneapolis. The distributorship was organized by J. T. Bailey and Walter Bradley.

Airtex Products Builds Branch Plant

Airtex Products Inc., Fairfield, Ill., will construct a factory at 32nd and Trinity streets, Los Angeles. The company manufactures automotive parts. Completion is scheduled by Feb. 1.

Fluorspar Mill Starts Operations

Kaiser Aluminum & Chemical Corp., Oakland, Calif., is producing fluorspar at its new processing mill near Fallon, Nev. Initial daily capacity is 100 tons of fluorspar ore with output to range to nearly 50 tons of fluorspar concentrates. Final

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processing is being done at Kaiser's Nichols, Calif., plant.

Armco Builds Fabricating Plant

Armco Drainage & Metal Products Inc., subsidiary of Armco Steel Corp., Middletown, O., is building a fabricating plant at Mansfield, Pa. The plant will fabricate corrugated metal pipe, Armco pipe arch, and fittings for both pipe and pipe arch. Operations are scheduled to begin late in the spring of 1953.

Pennsy Plans $9 Million Pier

Pennsylvania Railroad discussed with the Port of Baltimore Commission, Baltimore, the possibility of obtaining from that body $9 million for construction of a new pier on the site known as Pier 5, Clinton street, that city. R. W. Grigg is the Baltimore superintendent.

Alcoa Awards Press Erection Contract

F. H. McGraw & Co., New York, was awarded a contract by Aluminum Co. of America, Pittsburgh, for the erection of a 13,200-ton horizontal extrusion press at Alcoa's Lafayette, Ind., plant. The German-built press is being installed as part of the Air Force's heavy press program. The press is scheduled to be ready for first tests by June, 1953. In peacetime the press will be utilized to make aluminum pipe for the petroleum industry, as well as curtain walls for ultra-modern buildings and strong alloy shapes for the marine, railroad car, bus, truck and trailer industries.

Insul-Mastic Names Representatives

Insul-Mastic Corp. of America, Pittsburgh, appointed as its representatives: Industrial Insulators Inc., Borger, Tex.; Ozark Insulation Co. Inc., Little Rock, Ark.; Rust-Proofing Inc., Phoenix, Ariz.

Republic Gets Top Safety Award

Top industrial safety award of National Safety Council was presented to the Chicago district of Republic Steel Corp., Cleveland. This district includes plants at South Chicago and Moline, Ill. For a period of 256 consecutive days employees at the two plants worked 6,227,560 man-hours without a single lost-time accident. During the last three years the plants averaged only slightly more than one lost-time accident for each million man-hours worked. Current employment at Republic's South Chicago plant is about 3800; at the Moline plant, 150. James W. Tysse is safety supervisor for the Chicago district. C. P. Cutler is the Chicago district manager.

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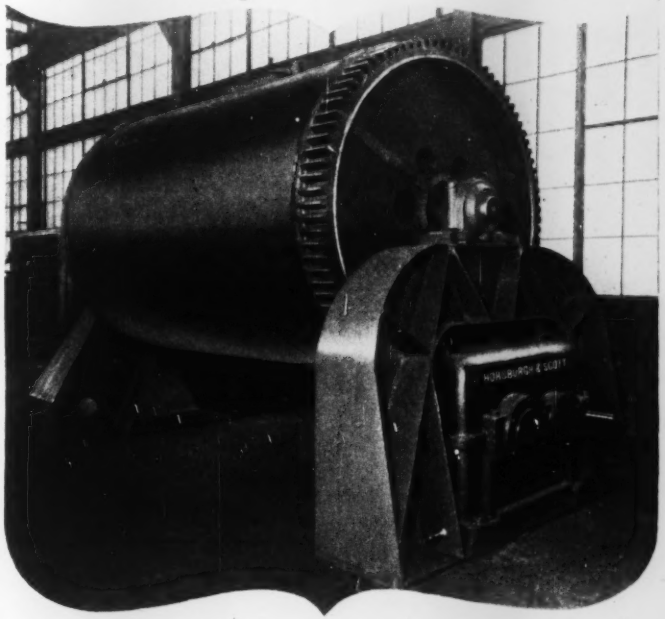
Greater safety



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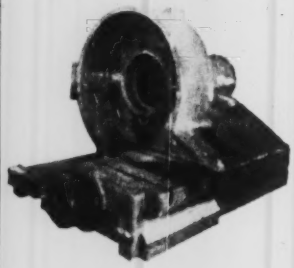

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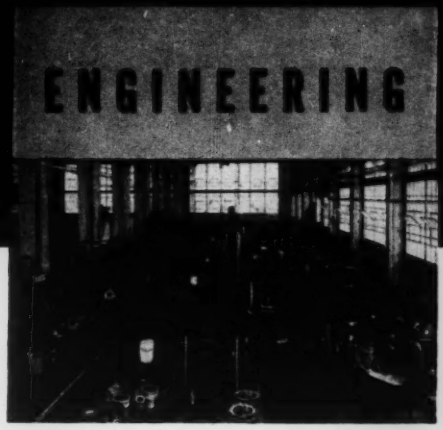

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Aetna-Standard Engineering Company, Ltd., Toronto, Ontario, Canada.

M. Castellvi, Inc., New York, N. Y.—Mexico, Central and South America.

Societe de Constructions de Montbard, Paris, France—France, Belgium, Holland, Luxembourg, Switzerland.

Demag Aktiengesellschaft, Duisburg, Germany—Germany, Austria, Yugoslavia, Greece, Turkey, Egypt.

Compagnia Italiana Forme Acciaio, Milano, Italy—Italy.

Aetna-Japan Company, Ltd., Tokyo, Japan—Japan.

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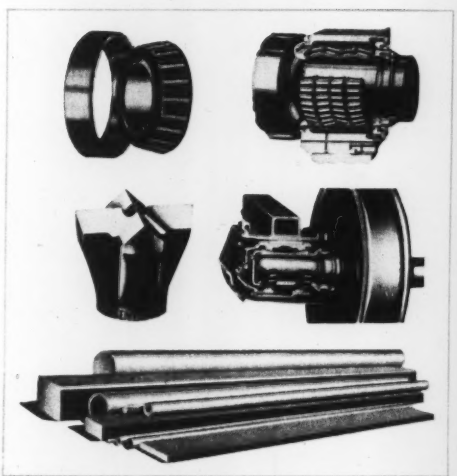
There's an "R" in TIMKEN®

HAVE you ever noticed we often spell "TIMKEN"® with an "R"? It's just to the right, near the top of the "N", and it means that "TIMKEN" is the registered trade-mark of The Timken Roller Bearing Company. It's your assurance of getting the highest quality tapered roller bearings, fine alloy steel bars, seamless steel tubing or removable rock bits.

But remember, "TIMKEN" *is* a trade-mark, not a type of product, and you'll find it only on products made by the Timken Company.

Industry has made it a habit to look for the trade-mark "TIMKEN" when buying tapered roller bearings, alloy steel bars or rock bits. Why not make "TIMKEN" your "buy word" too? There's over 50 years of experience behind it. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".